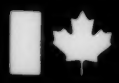

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# TRENT-SEVERN WATERWAY AND RIDEAU CANAL
# LOCKSTATION CLASSIFICATION ANALYSIS
# AND SURVEY SAMPLE SELECTION

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# EXECUTIVE SUMMARY

## 1.0 INTRODUCTION

This executive summary provides a synopsis of the grouping exercise for the lock classification system performed by the Socio-Economic Research Unit. Parks has prepared a Statement of Work for a Land Based Visitor Characteristics and Use Study for Lockstations along the Trent-Severn Waterway and Rideau Canal. In order for Parks to decide what lockstations should be sampled in the study, it was necessary for sampling efficiency reasons to collate the lockstations into categories on the basis of some common characteristics. The process of randomly selecting these stations is described as the second part of this report.

## 2.0 BACKGROUND

The Planning Division, with contribution from Waterway and Canal field staff, proposed a lockstation classification system which contained 3 categories: primary, secondary and tertiary. Each category was defined by a qualitative set of criteria and conditions. Subsequently, each lockstation was placed into one category on the basis of the planner's and field staff's knowledge and experience of each lockstation's general characteristics. Thus the planners compared lockstation characteristics qualitatively to category criteria and conditions and placed each lockstation in the category which most suitably defined that lockstation's characteristics (Figures 1 and 2).

FIGURE 1

PLANNING UNIT LOCKSTATION CLASSIFICATION RIDEAU CANAL

| PRIMARY (7) | SECONDARY (7) | TERTIARY (11) |
|---|---|---|
| Ottawa | Hartwells | Burritts Rapids |
| Long Island | Hogs Back | Lower Nicholsons |
| Merrickville | Black Rapids | Upper Nicholsons |
| Combined | Old Slys | Clowes |
| Newboro | Detached | Kilmarnock |
| Jones Falls | Narrows | Edmonds |
| Kingston Mills | Chaffeys | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |

FIGURE 2

PLANNING UNIT LOCKSTATION CLASSIFICATION TRENT-SEVERN WATERWAY

| PRIMARY (8) | SECONDARY (17) | TERTIARY (13) |
|---|---|---|
| Peterborough | Frankford | Glen Miller |
| Fenelon Falls | Hastings | Batawa |
| Bobcaygeon | Percy Reach | Trent |
| Kirkfield | Lindsay | Crowe Bay |
| Port Severn | Burleigh Falls | Campbellford |
| Big Chute | Gamebridge | Haigues Reach |
| Young's Point | Rosedale | Meyers |
| Trenton | Healey Falls | Sawyer Creek |
| | Glen Ross | Douro |
| | Lakefield | Otonabee |
| | Scott's Mills | Talbot |
| | Ranney Falls | Bolsover |
| | Nassau Mills | Sydney |
| | Couchiching | |
| | Murray Canal | |
| | Ashburnham | |
| | Buckhorn | |

The lockstation classification was expected to be relatively accurate due to the familiarity the staff possessed with the lockstations. However, in preparation for selecting the sample lockstations for the Trent-Severn-Rideau land visitor survey, these categories had to be verified using a systematic technique which employed standard criteria.

## 3.0 STUDY METHODOLOGY

The three ratings: Primary, Secondary and Tertiary, were retained from the planner's classification. Groupings were determined by a lockstation's score in each of four categories: level of service, natural and historic resource potential, attendance and population within a 40 km radius. In each category, a lockstation could receive a score of one, two or three. A score of one in a category would signify that the station holds a tertiary ranking in that category. A score of two would signify a secondary ranking in importance and a score of three would signify that the station is a primary station with respect to the criteria that define that category. Each of the four categories were weighted equally.

The scoring for two categories, level of service and natural and historic potential, was undertaken by the planners. They scored each station according to a set of criteria which they created to define these two categories. The attendance figures were chosen from data collected at the lockstations. Attendance data has been collected for the years 1982-1985 on the Trent-Severn Waterway; for the year 1981 on the Rideau Canal. As reliability problems exist with some of the Trent-Severn Waterway data, an exercise was undertaken to choose the most accurate figure for each station. Population figures were collected from cartographic and statistical information produced by the Departments of Transport, Energy, Mines and Resources, Statistics Canada and Government of Ontario publications.

The results of this analytical process are illustrated in Figure 3. Division of the sum by 4 occurs because there are 4 categorizing criteria with the resulting score in the range of 1-3. Thus the range of 1-1.66 defines a tertiary rating. A range of 1.67-2.33 defines the secondary lockstations. A range of 2.34-3.00 defines the primary stations.

FIGURE 3

| LOCKSTATION | ATT[1] | NHP[2] | L of S[3] | POP[4] | SCORE | TOTAL SCORE | OVERALL RATING |
|---|---|---|---|---|---|---|---|
| Peterborough | 3/P | 3/P | 3/P | 3/P | 12(4) | 3 | P |

Thus a proposed Lockstation Classification System, based upon 4 factors and resulting in one of three summary ratings is produced. The resulting lockstation classification for each waterway is illustrated in Figure 4 and Figure 5.

1. Attendance
2. Natural and Historic Potential
3. Level of Service
4. Population (day use market area)

FIGURE 4

ANALYZED TRENT-SEVERN WATERWAY LOCKSTATION CLASSIFICATION

| PRIMARY (4) | SECONDARY (16) | TERTIARY (18) |
|---|---|---|
| Peterborough | Trenton | Sydney |
| Bobcaygeon | Percy Reach | Glen Miller |
| Fenelon Falls | Ranney Falls | Batawa |
| Big Chute | Healey Falls | Trent |
| | Hastings | Frankford |
| | Scott's Mills | Glen Ross |
| | Ashburnham | Meyers |
| | Nassau Mills | Haigues Reach |
| | Lakefield | Campbellford |
| | Young's Point | Crowe Bay |
| | Burleigh | Otonabee |
| | Buckhorn | Douro |
| | Lindsay | Sawyer Creek |
| | Kirkfield | Rosedale |
| | Gamebridge | Bolsover |
| | Port Severn | Talbot |
| | | Couchiching |
| | | Murray Canal |

FIGURE 5

ANALYZED RIDEAU CANAL LOCKSTATION CLASSIFICATION

| PRIMARY (6) | SECONDARY (7) | TERTIARY (11) |
|---|---|---|
| Ottawa | Black's Rapids | Burritt's Rapids |
| Hartwells | Merrickville | Upper Nicholsons |
| Hogs Back | Narrows | Lower Nicholsons |
| Long Island | Newboro | Clowes |
| Jones Falls | Chaffeys | Kilmarnock |
| Kingston Mills | Davis | Edmunds |
| | Combined | Old Slys |
| | | Poonamalie |
| | | Beveridges |
| | | Upper Brewers |
| | | Lower Brewers |
| | | Detached |

## 4.0 DISCUSSION

Some descrepancy exists between the planners' grouping (see Fig. 1 and Fig. 2) and the lockstation classification resulting from socio-economic analysis (Figures 4 and 5). Each situation where a difference exists was examined by the two units in an attempt to resolve these descrepancies. Differences were usually attributable to inaccurate attendance figures or the equal weighting of the population category received in the analysis. Moreover in some cases little relationship exists between day use market area and attendance, as at Big Chute Lockstation. In other instances, lockstations in the planners' grouping were borderline cases. After consultation between the two units, final groupings for the two systems were arrived at. They are illustrated in Figures 6 and 7. Finally, a number of sites in the primary category possess several unique attributes (extremely high

attendance, superb natural and historic potential and outstanding features) such that they are easily distinguished from other stations in the primary category. For these reasons Big Chute, Peterborough and Ottawa are considered to be Super Primary Lockstations.

FIGURE 6

FINAL RIDEAU CANAL LOCKSTATION CLASSIFICATION

| PRIMARY (7) | SECONDARY (5) | TERTIARY (13) |
|---|---|---|
| Ottawa* | Hartwells | Burritt's Rapids |
| Long Island | Hogs Back | Upper Nicholsons |
| Merrickville | Black Rapids | Lower Nicholsons |
| Combined | Narrows | Clowes |
| Newboro | Chaffeys | Kilmarnock |
| Jones Falls | | Edmunds |
| Kingston Mills | | Old Slys |
| | | Detached |
| | | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |

*Designated as Super Primary Stations

FIGURE 7

FINAL TRENT-SEVERN WATERWAY LOCKSTATION CLASSIFICATION

| PRIMARY (7) | SECONDARY (5) | TERTIARY (13) |
|---|---|---|
| Peterborough* | Trenton | Sydney |
| Bobcaygeon | Frankford | Glen Miller |
| Fenelon Falls | Percy Reach | Batawa |
| Kirkfield | Ranney Falls | Trent |
| Big Chute* | Healey Falls | Glen Ross |
| Port Severn | Hastings | Meyers |
| | Scott's Mills | Haigues Reach |
| | Ashburnham | Campbellford |
| | Nassau Mills | Crowe Bay |
| | Lakefield | Otonabee |
| | Young's Point | Douro |
| | Burleigh | Sawyer Creek |
| | Buckhorn | Rosedale |
| | Lindsay | Bolsover |
| | Gamebridge | Talbot |
| | | Couchiching |
| | | Murray Canal |

*Designated as Super Primary Stations

## 5.0 RANDOM SURVEY

The latter part of this report outlines a sampling scheme Parks proposes consultants utilize in the land-based visitor survey. The purpose of the sampling scheme is to select the lockstations to be surveyed in an unbiased fashion. The classification of lockstations into categories of similar characteristics permits random selection of sites from each cluster which represents that grouping in a statistically valid manner. This approach allows for the establishment of sampling objectives for each grouping of stations by setting confidence intervals and margins of error.

The two survey populations are visitors to the Rideau and Trent-Severn Waterways. The sub-populations are the visitors to each waterway during the spring shoulder, peak and fall shoulder seasons. Sampling reliability objectives for each season are set according to the importance for planning purposes of the required data collected (i.e. a high level of confidence and low margin of error for peak summer use period). Attendance and response rates are also incorporated into the sample design.

The result of the sample design and application to each of the groupings was the selection of the survey lockstations for the land-based study. They are as follows:

FIGURE 8

RANDOMLY SELECTED STATIONS

| | Trent-Severn | Rideau |
|---|---|---|
| Primary | Fenelon Falls | Long Island |
| | Kirkfield | Smiths Falls |
| | | Combined |
| Secondary | Scott's Mills | Narrows |
| | Lakefield | Chaffeys |
| Tertiary | Crowe Bay | Upper Nicholsons |
| | Couchiching | Edmunds |
| | Murray Canal | |

In addition to this survey group, specific lockstations have been selected by Parks for management planning, operational and geographic distribution purposes. These stations must be surveyed as well as those in Figure 8. The consultant will use the margins of error and confidence levels established by Parks for each class of station selected.

FIGURE 9

REQUIRED LOCKSTATIONS FOR SAMPLING

| | Primary | Secondary | Tertiary |
|---|---|---|---|
| Trent-Severn | Peterborough* | Trenton | Ø |
| | Big Chute* | Youngs Point | |
| | Bobcaygeon | Gamebridge | |
| | Port Severn | | |
| Rideau Canal | Ottawa* | Chaffeys | Ø |
| | Smiths Falls | | |
| | Combined | | |
| | Jones Falls | | |

*Super Primary

FIGURE 10

ALL STATIONS REQUIRED FOR SURVEYING -
RANDOMLY SELECTED AND REQUIRED BY PARKS

| | Primary | Secondary | Tertiary |
|---|---|---|---|
| Trent-Severn | Peterborough* | Scotts Mills | Crowe Bay |
| | Big Chute* | Lakefield | Couchiching |
| | Bobcaygeon | Trenton | Murray Canal |
| | Fenelon Falls | Youngs Point | |
| | Kirkfield | Gamebridge | |
| | Port Severn | | |
| Rideau Canal | Ottawa Locks* | Narrows | Nicholsons |
| | Long Island | Chaffeys | Edmunds |
| | Smiths Falls Combined | | |
| | Kingston Mills | | |
| | Jones Falls | | |

*Super Primary

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# 1.0 INTRODUCTION

## 1.1 Purpose

This report has two purposes. One is to verify using systematic techniques the lockstation classifications used by the Planning Section for the Rideau Canal and Trent-Severn Waterway. The other purpose is to devise and select a sample of lockstations to be surveyed by the consultants performing the 1987 land-based visitor characteristics and use study for lockstations along the Trent-Severn Waterway and Rideau Canal.

## 1.2 Format

This report is divided into the following sections:

Section 1: Describes the purpose and format of this report;

Section 2: Describes the background and objectives of this report;

Section 3: Describes the lockstation classification system used by the Planning Section;

Section 4: Describes the structure of the socio-economic classification system;

Section 5: Discussion of the differences between the Planner's lockstation classification and the systematic classification.

Section 6: Provides a description of the 1987 land-based study and objectives;

Section 7: Describes data requirements and sampling needs, the sampling procedure, and identifies the lockstations selected; and

Section 8: Conclusion

## 2.0 BACKGROUND LOCK CLASSIFICATION

### 2.1 Background

As a result of the 1985 socio-economic information management needs review for the Waterways, Parks is undertaking in the 1986 and 1987 seasons a set of comprehensive lockstation studies. In 1986, a survey is being conducted to assemble socio-economic data on people who boat on the Waterways. In 1987, Parks intends to have consultants perform a land-based visitor characteristics and use study at lockstations along both Waterways. Objectives of this study include "the collection and analysis of data related to socio-demographic and trip characteristics of visitors who arrive at lockstations by land. Information will also be collected and analysed on patterns of site, activity, service, facility and program use and visitor satisfaction and development preferences". (Statement of Work, 1986, pg.2)

There are 25 land-accessible lockstations along the Rideau Canal and 38 land-accessible lockstations along the Trent-Severn Waterway. In total there are 63 lockstations and approximately 1,350,000 visitors involved in the study. For a study group this size, money and time constraints eliminate the possibility of performing a census. Moreover a sample at every station would logistically be difficult and still costly. Another constraint is the database formed from either waterway would be so large as to make it difficult to extract the information relevant to the study objectives. Thus a problem of sampling efficiency with respect to cost, time, logistics and database management was apparent.

In 1978, the Planning Section created three lockstation categories; primary, secondary and tertiary in a lockstation classification exercise for management purposes. A set of criteria defined each category, thus the lockstations in any one category shared similar characteristics and constituted a homogeneous group. Due to the homogeneous nature of the groups, sampling a small number of stations in each group would enable the visitor survey study objectives to be achieved. However the classification was undertaken qualitatively using the planner's and waterway staff's experience and expertise; rather than a rigorous application of a set of criteria. In order for the sample to be statistically valid, the homogeneous nature of the groupings had to be verified using a systematic technique which employed standard criteria.

## 2.2 Objectives

The objectives of this report are:

1. To develop evaluative criteria for classifying each lockstation;

2. To establish a revised lockstation classification system;

3. To define the sample requirements for the land-based study; and

4. To choose the stations to be sampled.

## 3.0 THE PLANNING LOCKSTATION CLASSIFICATION SYSTEM

### 3.1 Background

No formalized lockstation classification system exists for the Rideau Canal. Management planning and work has proceeded on the basis of the staff's experience and knowledge. The Rideau lockstation classification in Fig. 1 is a list provided by the staff on the basis of their experience and knowledge. The staff referred to the lockstation classification system developed for the Trent-Severn as one of their guides to classifying the Rideau stations into the three categories.

The Trent-Severn Lockstation Classification System was developed in an overall concept plan in 1978, entitled Trent-Severn Waterway Planning Concepts. Lockstations were classified as primary, secondary or tertiary depending on how they conceptually fitted into a set of criteria. The lockstation classification system was reviewed in 1985 and the evaluation criteria were expanded and updated to reflect "a better understanding of resources, activities and changing conditions". (Classification, 1986, pg.1) The evaluation criteria are described in the next section.

### 3.2 Classification System

The evaluative criteria analyzed to differentiate between the three classes of lockstations are:

1) Presence and significance of natural, historical and/or archaeological resources on and off-site (adjacent properties);

2) Location of lockstation with respect to accessibility (water and land); surrounding land uses (compatibility); tourist market areas and waterway entrance points (gateways);

3) Visitor numbers (land and water) and types of visitor activities;

4) The capability of the land and water base to accommodate visitors;

5) Interpretive potential including presence and significance of resources and theme coverage (national, regional, and/or local);

6) Major development pressures from private and public sectors; and

7) Unique or special contributions to the overall character of the Waterway.

On the basis of the above criteria the lockstations were classified as primary, secondary or tertiary. The following figures summarize the results of the evaluative process.

## 3.3 Lockstation Classification

Figure 1
Planner's Rideau Lockstation Classification

| Primary (7) | Secondary (7) | Tertiary (11) |
|---|---|---|
| Ottawa | Hartwells | Burritt's Rapids |
| Long Island | Hogs Back | Lower Nicholsons |
| Merrickville | Black Rapids | Upper Nicholsons |
| Combined | Old Slys | Clowes |
| Newboro | Detached | Kilmarnock |
| Jones Falls | Narrows | Edmunds |
| Kingston Mills | Chaffeys | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |

Figure 2

Planner's Trent-Severn Waterway Lockstation Classification

| Primary (8) | Secondary (17) | Tertiary (13) |
|---|---|---|
| Peterborough | Frankford | Glen Miller |
| Fenelon Falls | Hastings | Batawa |
| Bobcaygeon | Percy Reach | Trent |
| Kirkfield | Lindsay | Crowe Bay |
| Port Severn | Burleigh Falls | Campbellford |
| Big Chute | Gamebridge | Haigues Reach |
| Young's Point | Rosedale | Meyers |
| Trenton | Healey Falls | Sawyer Creek |
| | Glen Ross | Douro |
| | Lakefield | Otonabee |
| | Scott's Mills | Talbot |
| | Ranney Falls | Bolsover |
| | Nassau Mills | Sydney |
| | Couchiching | |
| | Murray Canal | |
| | Ashburnham | |
| | Buckhorn | |

## 3.4 Discussion

This lockstation classification should be relatively accurate due to the familiarity the staff possessed with the lockstations. However concerns exist with using this general planning lockstation classification based on both water and land-based factors in the exclusively land-based study.

### 3.4.1 Water

In the evaluation criteria, stations were analyzed for their ability to perform against water related factors such as boater accessibility, boater attendance and the capability of the water base to accommodate visitors. In a land-based lock classification system, these factors are non-sequitor. The classification of some stations would change if only land-based factors were accounted for in the evaluation criteria. Rosedale is an example of a station which scores higher when water-based factors are included in the evaluation criteria.

### 3.4.2 Attendance

In the 1985 update the planners prepared their attendance evaluation using figures from 1982. These were the best estimates available at the time however for the Trent-Severn Waterway, attendance data to the year 1985 (inclusive) is now available (Whiting, 1986). When reliability problems do not preclude their use, the newer data will be used. Some Trent-Severn lockstations(ex. Big Chute) have experienced a large growth in attendance during the last three years.

There is only one set of attendance data, Revill's 1981 work, available for the Rideau Canal. However a few more recent single lockstation studies have included updated attendance estimates. The data will be included in the new analysis.

### 3.4.3 Scalar Rating System

In the evaluation process for the 1985 study, categorical differences were delineated by the use of scalar quantities such as major, high, limited, etc. Scalar quantification has the dual problem of large grey areas (where does one category stop and the other start) and relative interpretation by an individual. Both could cause error in the evaluation process. The use of an ordinal deliniation system should eliminate most errors attributable to these two factors.

## 4.0 SOCIO-ECONOMIC CLASSIFICATION SYSTEM

### 4.1 Introduction

The report Classification System for the Trent-Severn Waterway Lockstations discusses the general purpose for having a classification system and the range of purposes for lockstations. The Trent-Severn report also describes the underlying principles for having a classification system. In general, the reasons and principles for a classification system do not change because of this analysis. The purpose of the socio-economic classification exercise is to verify through the use of systematic techniques the planning lockstation classification; and to recognize those factors identified in Section 3.4.

### 4.2 Study Methodology

The three class designation of lockstations; primary, secondary and tertiary, are retained from the planner's classification system. Designation to a class was determined by a lockstation's score in each of four categories: level of service, natural and historic resource potential, attendance and day use market area (population within a 40 km radius). In each category a lockstation could receive a score of one, two or three. A score of one in a category would signify that the lockstation holds a tertiary rankilng in that category. A score of two would signify a secondary ranking in importance and a score of three would signify that the station is a primary station with respect to the criteria that define that category. Each of the four categories were weighted equally.

Within each category a set of evaluative criteria were employed to distinguish between the three possible scores a lockstation could receive. A description of each evaluative category and the criteria used in stratifying that category is given in the following section.

## 4.3 Classification System

### 4.3.1 Level of Service

Included in the evaluative criteria of the Trent-Severn classification update were the following: the capability of the land base to accommodate visitors; and the interpretive potential defined by the presence and significance of the theme coverage (national, regional and/or local). As a category, level of service provides a measurable interpretation of both criteria. Capability of the land base is equated to the amount and/or size of facilities on site. Coverage is equatable with gradations of service quality provided. Using this criteria as a guide, the definitions of primary, secondary and tertiary level of service are as follows:

#### 4.3.1.1 Tertiary Level of Service

A tertiary station's service facilities would include washrooms, a parking lot, picnic tables, groomed grounds and possibly other features such as barbecue facilities. These features are considered basic to all lockstations except those which are not land accessible.

#### 4.3.1.2 Secondary Level of Service

A secondary station's service facilities include both those found at a tertiary level and some extra attracting feature or tertiary facilities existing at a larger than normal scale. Extra attracting features could be historic features, special resources such as interpretive media panels or facilities such as boat launches and landings. Large scale facilities could be extra parking lots or larger developed grounds.

4.3.1.3 Primary Level of Service

The primary category includes tertiary facilities plus a higher scale of interpretive development and/or visitor facility development. Examples of interpretive development could be roving interpreters or animation. Examples of visitor facility development could be a beach or a museum.

The scoring for level of service was performed by the planning section. It was performed on the basis of their knowledge of each station's facilities. Figures 3 and 4 illustrate the results of the analysis.

4.3.1.4 Level of Service Lockstation Classification

Figure 3
Rideau Canal Level of Service Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Ottawa | Hartwells | Burritt's Rapids |
| Long Island | Hogs Back | Lower Nicholsons |
| Merrickville | Black Rapids | Upper Nicholsons |
| Newboro | Old Slys | Clowes |
| Chaffeys | Combined | Kilmarnock |
| Jones Falls | Narrows | Edmonds |
| Kingston Mills | | Detached |
| | | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |

Figure 4

Lockstations Trent-Severn Waterway Level of Service

| Primary | Secondary | Tertiary |
|---|---|---|
| Peterborough | Nassau Mills | Murray Canal |
| Big Chute | Young's Point | Trenton |
| Fenelon Falls | Burleigh Falls | Sydney |
| | Bobcaygeon | Glen Miller |
| | Kirkfield | Batawa |
| | Gamebridge | Trent |
| | Port Severn | Frankford |
| | | Glen Ross |
| | | Percy Reach |
| | | Meyers |
| | | Haigues Reach |
| | | Ranney Falls |
| Note: 4 stations left out as | | Campbellford |
| "not" accessible | | Crowe Bay |
| | | Healey Falls |
| Lovesick | | Hastings |
| Portage | | Scott's Mills |
| Thorah | | Ashburnham |
| Swift Rapids | | Otonabee |
| | | Douro |
| | | Sawyer Creek |
| | | Lakefield |
| | | Buckhorn |
| | | Lindsay |
| | | Rosedale |
| | | Bolsover |
| | | Talbot |
| | | Couchiching |

4.3.2 Natural and Historic Resource Potential

Three evaluative criteria in the classification update were as follows:

1) Presence and significance of natural, historical, and/or archaeological resources on and off/site (adjacent properties);

2) Interpretive potential of resources; and

3) Unique or special contributions to the overall character of the Waterway.

These criteria are retained as the evaluative criteria for the category, natural and historic resource potential. The planning section defined the characteristics of a lockstation which possess primary, secondary or tertiary natural and historic resource potential. Scoring was also performed by the planners who are most familiar with the attributes of each lockstation with respect to this criteria. The procedure is a qualitative assessment based on knowledge and experience as it is difficult to "measure" potential. Using the aforementioned criteria, the planners defined primary, secondary and tertiary natural and historic resource potential as follows:

4.3.2.1 Primary Natural and Historic Resource Potential

The designation of a primary lockstation is based upon:

- the presence of nationally significant natural, historical and/or archaeological resources which can be preserved;

- the potential for major interpretive programs based on the Waterway's nationally significant human and natural history themes;

- a unique or special contribution to the overall character of the Waterway.

4.3.2.2 Secondary Natural and Historic Resource Potential

A secondary lockstation may be defined by:

- the presence of regionally significant natural, historical and/or archaeological resources which can be preserved;

- the potential for interpretive programs based on the Waterway's regionally significant human and natural history themes.

4.3.2.3 Tertiary Natural and Historical Resource Potential

A tertiary lockstation has a limited presence of natural, historical and/or archaeological resources.

4.3.2.4 Natural and Historic Resources Potential Lockstation Classification

The following are the results of the evaluation:

Figure 5

Rideau Canal Natural and Historic Resource Potential Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Ottawa | Hartwells | Burritts Rapids |
| Long Island | Hogs Back | Lower Nicholsons |
| Merrickville | Black Rapids | Upper Nicholsons |
| Combined | Old Slys | Clowes |
| Newboro | Narrrows | Kilmarnock |
| Jones Falls | Chaffeys | Edmonds |
| Kingston Mills | | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |
| | | Detached |

Figure 6

Trent-Severn Waterway Natural and Historic Resource Potential Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Peterborough | Frankford | Glen Miller |
| Fenelon Falls | Hastings | Batawa |
| Bobcaygeon | Percy Reach | Trent |
| Kirkfield | Lindsay | Crowe Bay |
| Port Severn | Burleigh Falls | Campbellford |
| Big Chute | Gamebridge | Haigues Reach |
| Trenton | Rosedale | Meyers |
| | Healey Falls | Sawyer Creek |
| | Ashburnham | Douro |
| | Glenn Ross | Otonabee |
| | Lakefield | Talbot |
| | Scotts Mills | Bolsover |
| | Ranney Falls | Sydney |
| | Nassau Mills | |
| | Couchiching | |
| | Murray Canal | |
| | Young's Point | |
| | Buckhorn | |

### 4.3.3 Attendance

One criterion in the update was visitor numbers to lockstations. This has been retained as a category in the analysis, however the method of evaluation is different. In the update attendance information was obtained from A.D. Revill's work in 1981. Classification was based on interpretation of high, low, etc. For example, a figure of 15000 for Upper Brewers could be interpreted as a high attendance for that station whereas a figure of 25000 visitors to the Ottawa locks could be interpreted as low. These hypothetical examples illustrate a problem of classification as they are correct from an individual station's perspective.

This analysis attempts to classify each lockstation against the perspective of all lockstations on a waterway. Thus a different method of class designation is suitable. For each waterway, the attendance data was compiled and a range was calculated (the difference between the high and low values). The range was then subdivided into three equal parts; the first 33% of the range is the tertiary class; the middle 33% of the range is the secondary class; and last 33% of the range is the primary class. When the range for each waterway is calculated, extreme values were discarded from the calculation to avoid skewing the range. However, these values are included in the appropriate class during the evaluation process. In summary, this methodology is suitable for this exercise as any one attendance figure would be classified on the basis of its value compared to all other values which make up the range.

Rideau Canal visitation figures were obtained from A.D. Revill's 1981 report and more recent data for Kingston Mills and Upper Brewers. The data is outdated but is suitable for comparative analysis allowing each lockstation to be evaluated in the context of the whole waterway.

Trent-Severn attendance data was obtained from Trent-Severn Waterway Attendance Estimates by Peter Whiting (1986). This study contains visitor statistics for the years 1982-1985 (inclusive). However, Whiting points out that not all of the attendance estimates are reliable. An exercise utilizing Whiting's data was undertaken to choose the most reliable figure for each lockstation (Appendix A). The methodology for categorizing into classes is as described previously.

#### 4.3.3.1 Rideau Canal Attendance Classification

The low attendance figure is approximately 6000 for Upper Nicholsons and the high attendance figure is approximately 25000 at Hartwells (Ottawa at 187,000 is excluded to avoid skewing). This gives a range of 19000 (25000-6000) and three class intervals: Tertiary 6000-12333, Secondary 12334-18666 and Primary 18667+. Rideau Lockstation attendance classification is as follows:

Figure 7

Rideau Lockstation Attendance Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Ottawa | Burritts Rapids | Black Rapids |
| Hartwells | Clowes | Long Island |
| Hogs Back | Kilmarnock | Upper Nicholsons |
| Kingston Mills | Edmunds | Lower Nicholsons |
| | Poonamalie | Merrickville |
| | Narrows | Old Slys |
| | David | Combined |
| | Jones Falls | Detached |
| | Lower Brewers | Newboro |
| | | Chaffeys |
| | | Upper Brewers |

4.3.3.2 Trent-Severn Waterway Attendance Classification

The low attendance figure is approximately 1500 at Glen Ross and the high attendance figure is approximately 28000 at Lindsay. Rounding down to 0 and up to 30000 gives a range of 30,000 with three classes of 10000 each. Tertiary is 0-9999, secondary is 10000-19999 and primary is 20000+. The primary figures above 30000 were not used in range calculation because of extreme skewness. If they were included, all lockstations would classify as tertiary except three. The resulting attendance classification is shown in Figure 8.

Figure 8

Trent-Severn Waterway Attendance Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Peterborough | Scott's Mills | Murray Canal |
| Lindsay | Ashburnham | Trenton |
| Kirkfield | Nassau Mills | Sydney |
| Gamebridge | Lakefield | Glen Miller |
| Big Chute | Young's Point | Batawa |
| Bobcaygeon | Burleigh | Trent |
| Fenelon Falls | Buckhorn | Frankford |
| | Talbot | Glen Ross |
| | Port Severn | Percy Reach |
| | | Ranney Falls |
| | | Campbellford |
| | | Crowe Bay |
| | | Healey Falls |
| | | Hastings |
| | | Otonabee |
| | | Douro |
| | | Sawyer Creek |
| | | Rosedale |
| | | Bolsover |
| | | Couchiching |

4.3.4 Day Use Market Area

The final category of analysis in this study is day use market area. Discussion within the socio-economic and planning sections ascertained that a 40 km radius for the day market area would be suitable. This translates to a 20 to 30 minute drive in most areas; it was thought

that the typical lockstation user would be reluctant to spend more than 30 minutes driving. A problem with this assumption: What is a typical lockstation user? In some situations, such as at Big Chute, the visitor is often from Toronto or beyond (3-4 hour drive); in other cases such as Fenelon Falls or Lakefield, the average visitor is a local resident, often travelling by foot to the site. Difficulties in predicting travel over large distances are discussed below.

The criterion of a 40 km drive does not exactly correspond with the criterion of "location of the lockstation with respect to tourist market areas" used by the planners in the 1985 update. A problem is the update criterion implies that all lockstation visitors are tourists which, as has been discussed, is often not the case. Additionally it is difficult to decide what the tourist market areas are for each lockstation. It would be a judgemental decision as little hard data of this nature has been collected for most lockstations. With no basis for extropolating over large distances, Parks has decided to use the conservative but realistic assumption of a 40 km radius, identifying the population which would normally be accessible to the station daily.

4.3.4.1 Methodology

Maps were drawn of the townships within a 40 km radius of each lockstation. From various sources (1985 Municipal Directory, 1985 Canada Almanac, etc.) the population figures for townships, cities, towns and villages were catalogued. The sum of the population figures comprises the day use market population for a lockstation (see Appendix B). The range of the set is the high population figure minus the low population figure. Extreme values are discounted to avoid skewing. The population range is divided into 3 subsidiary ranges of equal length. The low third of the population range is the tertiary range, the middle third is the secondary range and the high third is the primary range of the population.

4.3.4.2 Day Use Market Area Classification

The following summarizes the results of the evaluation in Appendix B.

Figure 9

Rideau Canal Day Use Market Area Lockstation Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Ottawa | Burritts Rapids | Kilmarnock |
| Hartwells | Nicholsons | Edmunds |
| Hogs Back | Clowes | Old Slys |
| Black Rapids | Merrickville | Combined |
| Long Island | Upper Brewers | Detached |
| Chaffeys | Lower Brewers | Poonamalie |
| Davis | Kingston Mills | Beveridges |
| Jones Falls | | Narrows |
| | | Newboro |

Figure 10

Trent-Severn Waterway Day Use Market Area Lockstation Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Percy Reach | Trenton | Fenelon Falls |
| Meyers | Sydney | Rosedale |
| Haigues Reach | Glen Miller | Kirkfield |
| Ranney Falls | Batawa | Bolsover |
| Campbellford | Trent | Talbot |
| Crowe Bay | Frankford | Gamebridge |
| Healey Falls | Glen Ross | Couchiching |
| Hastings | Youngs Point | Big Chute |
| Scotts Mills | Burleigh | Port Severn |
| Ashburnham | Buckhorn | |
| Peterborough | Bobcaygeon | |
| Nassau Mills | | |
| Otonabee | | |
| Douro | | |
| Sawyer Creek | | |
| Lakefield | | |
| Lindsay | | |

## 4.4 Land-Based Lockstation Class Designation

Combining the scores from the four categories produces a final land-based lockstation class designation. The evaluation procedure and data are contained in Appendix C. The following figures summarize the results of the evaluation procedure.

Figure 11

Rideau Canal Lockstation Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Ottawa | Black Rapids | Burritts Rapids |
| Hartwells | Merrickville | Upper Nicholsons |
| Hogs Back | Combined | Lower Nicholsons |
| Long Island | Narrows | Clowes |
| Jones Falls | Newboro | Kilmarnock |
| Kingston Mills | Chaffeys | Edmunds |
| | Davis | Old Slys |
| | | Detached |
| | | Poonamalie |
| | | Beveridges |
| | | Upper Brewers |
| | | Lower Brewers |

Figure 12
Trent-Severn Waterway Lockstation Classification

| Primary | Secondary | Tertiary |
|---|---|---|
| Peterborough | Trenton | Sydney |
| Bobcaygeon | Percy Reach | Glen Miller |
| Fenelon Falls | Ranney Falls | Batawa |
| Big Chute | Healey Falls | Trent |
| | Hastings | Frankford |
| | Scott's Mills | Glen Ross |
| | Ashburnham | Meyers |
| | Nassau Mills | Haigues Reach |
| | Lakefield | Campbellford |
| | Young's Point | Crowe Bay |
| | Burleigh | Otonabee |
| | Buckhorn | Douro |
| | Lindsay | Sawyer Creek |
| | Kirkfield | Rosedale |
| | Gamebridge | Bolsover |
| | Port Severn | Talbot |
| | | Couchiching |
| | | Murray Canal |

## 5.0 DISCUSSION

Some discrepancy exists between the planner's grouping (see Figure 1 and 2) and the lockstation classification resulting from the socio-economic analysis (see Figure 11 and 12). On the Rideau Canal, 7 lockstations differ in their class designation. The Trent-Severn Waterway has 8 stations which differ in class designation. Each situation where a difference existed was examined by the two units in an attempt to resolve the discrepancies. As discussed in section 3.4.1, the planning classification system accounted for land and

water-based factors. Some station movement was attributable to the heavy weighting and emphasis of their water related factors in the planning system.

Other differences in class designation were attributable to inaccurate attendance data or a poor relationship between day use market and attendance (ex. Big Chute). An analysis by lockstation occurs in Appendix D. After this consultation between the two units, final groupings for the two waterways were arrived at. They are illustrated in Figures 13 and 14.

## 5.1 Super Primary Lockstations

A number of sites in the primary category possess several unique attributes (extremely high attendance, superb natural and historic potential and outstanding features) such that they are easily distinguished from other stations in the primary category. On the Rideau Canal the Ottawa lockstation, which recived a perfect score in the socio-economic analysis, was designated super primary. On the Trent-Severn Waterway two stations, Peterborough and Big Chute were designated super primary. Peterborough received a perfect score in the socio-economic system and Big Chute a near perfect score.

Figure 13

Land-Based Rideau Canal Lockstation Classification

| Primary (7) | Secondary (5) | Tertiary (13) |
|---|---|---|
| Ottawa* | Hartwells | Burritts Rapids |
| Long Island | Hogs Back | Upper Nicholsons |
| Merrickville | Black Rapids | Lower Nicholsons |
| Combined | Narrows | Clowes |
| Newboro | Chaffeys | Kilmarnock |
| Jones Falls | | Edmunds |
| Kingston Mills | | Old Slys |
| | | Detached |
| | | Poonamalie |
| | | Beveridges |
| | | Davis |
| | | Upper Brewers |
| | | Lower Brewers |

*Designated as a Super Primary Station

Figure 14

Land-Based Trent-Severn Waterway Lockstation Classification

| Primary (6) | Secondary (15) | Tertiary (17) |
|---|---|---|
| Peterborough* | Trenton | Sydney |
| Bobcaygeon | Frankford | Glen Miller |
| Fenelon Falls | Percy Reach | Batawa |
| Kirkfield | Ranney Falls | Trent |
| Big Chute* | Healey Falls | Glen Ross |
| Port Severn | Hastings | Meyers |
| | Scott's Mills | Haigues Reach |
| | Ashburnham | Campbellford |
| | Nassau Mills | Crowe Bay |
| | Lakefield | Otonabee |
| | Young's Point | Douro |
| | Burleigh | Sawyer Creek |
| | Buckhorn | Rosedale |
| | Lindsay | Bolsover |
| | Gamebridge | Talbot |
| | | Couchiching |
| | | Murray Canal |

*Designated as a Super Primary Station

## 6.0 SURVEY BACKGROUND AND OBJECTIVES

Parks will contract consultants to perform in 1987, a land-based visitor characteristics and use study at lockstations along the Trent-Severn Waterway and Rideau Canal. At present Parks possesses little socio- economic information detailing the characteristics, site/facility/ service use patterns, needs, satisfaction with facilities and services and development preferences of land-based visitors to lockstations along either waterway. However, Parks requires this socio-economic information in order to assist in decisions concerning specific waterway management issues that are currently being addressed at Ontario Region, Parks. These management issues include developing Management Plans, undertaking the Visitor Activity Management Process (VAMP) and planning for new capital development on both systems.

The most complete information data-base would be one assembled by either a census of the lockstations or a sample performed at each lockstation. Unfortunately sampling efficiency reasons eliminate the possibility of either of these information collection methods being employed. Either study method would be prohibitively expensive for Parks to contract to a private firm. For the private consultant, study logistics would be complex and the firm would obtain a huge and possibly cumbersome data-base to manage and interpret according to Parks required information needs.

With these problems in mind, Parks has decided to suggest one possible strategy for obtaining the required socio-economic information objectives. This approach guarantees to Parks that a valid methodology will be employed in obtaining the information as well as providing consultants when bidding a clear indication of the required level of effort for the study. This approach also has the benefit of providing the consultants with an approved study method, one which they did not have to go to the expense of devising themselves. However, any comments or suggestions consultants may have with respect to the methodology are welcomed by Parks.

## 7.0 DATA REQUIREMENTS AND SAMPLING NEEDS

### 7.1 Preface

This sampling strategy proposed will not touch upon field procedures. Its purpose is to indicate to the consultants what lockstations they are to sample in order to collect statistically valid information and why these lockstations have been selected from the total of 64 stations.

### 7.2 Survey Population

The two separate survey populations are all land-based visitors to lockstations on the Trent-Severn Waterway; and to lockstations on the Rideau Canal. For this study, a visitor is defined as anyone on lockstation grounds except Parks staff, family members of Parks staff living on the lockstation grounds or contractors working for the Park. The population size for the two waterways combined is estimated at 1,350,000 visitors annually.

### 7.3 Survey Frame

Because the field procedures have not been decided upon; and that they will differ for most lockstations, a more abstract survey frame is provided. For this study the survey frame will be those people who enter upon lockstation grounds by any land-based method between May 20, 1987 (official opening) and October 16, 1987 (official closing) between the hours of 9:00 a.m. and 9:00 p.m.

### 7.4 Survey Sampling Technique

There are major concerns in designing a survey sample. One concern is to ensure that the sample size is statistically significant for given levels of confidence and margin of error for every survey population and sub-population. Statistically significant results are ensured in

this study by using the "Required Sample Size for Estimating Population (and Sub-population) Proportions" technique (Sampling Techniques, 1977). This technique determines the number of observations necessary such that the normal curve may be assumed to be the sampling distribution of the population/sub-population. The formula is:

$$n = \frac{P(1-P)}{\left(\frac{e}{z}\right)^2 + \frac{P(1-P)}{N}}$$

n = sample size
P = proportion
e = margin of error
z = confidence limit
N = population size

The sub-populations of interest are:

1. Land-based visitors on each waterway.

2. Land-based visitors on each waterway during these seasons:
   a) Spring Shoulder (May 20 - June 14)
   b) Summer (June 15 - Sept. 15)
   c) Fall Shoulder (Sept. 16 - Oct. 16)

In order to provide statistically reliable results for each of the sub-populations of interest, the sample is stratified by:

1. Waterway

2. Season

3. Lock Classification: 1) Super Primary
   2) Primary
   3) Secondary
   4) Tertiary

The first part of this exercise was the analysis of a lock classification system. This system grouped lockstatons into 4 class designations on the basis of 4 criteria: attendance, natural and historic resource potential, day-use market area and level of service. An assumption made in this sample design is that each class designation of lockstations is homogeneous. Thus any one lockstation in any class may be assumed to be representative of the general characteristics of the other lockstations in that group. Furthermore, trend data indicates that yearly attendance can be broken down by season as follows: spring 15%, summer 75%, and fall 10%. The following table illustrates the survey sample population based on a seasonal breakout of attendance:

Table 1

Sample Population Based on Attendance Estimates

| | Total | Spring | Peak | Fall |
|---|---|---|---|---|
| **Trent-Severn Waterway P = 863019** | | | | |
| Super Primary (2)* | 274,623 | 41,193 | 205,967 | 27,462 |
| Primary (4) | 277,988 | 41,698 | 208,491 | 27,799 |
| Secondary (15) | 198,315 | 29,747 | 148,736 | 19,832 |
| Tertiary (17) | 112,093 | 16,814 | 84,070 | 11,209 |
| **Rideau Canal P = 488071** | | | | |
| Super Primary (1) | 187,736 | 28,160 | 140,802 | 18,774 |
| Primary (6) | 78,306 | 11,746 | 58,730 | 7,830 |
| Secondary (5) | 83,358 | 12,503 | 62,519 | 8,336 |
| Tertiary (13) | 138,671 | 20,801 | 104,003 | 13,867 |

*Indicates number of lockstations in class

Confidence levels and margins of error vary between groups and seasons for the Rideau Canal and Trent-Severn Waterway due to grouping specifications designated by Parks. They have been set such that the actual "n" (number of contacts) represents about 4%-8% of the total sub-population in that seasonal class designation. The sampling reliability objectives are provided in the following tables.

Table 2

Sampling Reliability Objectives - Trent-Severn Waterway

| Groups / Seasons | Super Primary | | Primary | | Secondary | | Tertiary | |
|---|---|---|---|---|---|---|---|---|
| | *C.L. | **M.E. | C.L. | M.E. | C.L. | M.E. | C.L. | M.E. |
| Spring Shoulder | 95% | 5% | 95% | 5% | 95% | 7.5% | 95% | 7.5% |
| Peak | 99% | 3% | 99% | 3% | 99% | 3% | 95% | 3% |
| Fall Shoulder | 95% | 5% | 95% | 5% | 95% | 7.5% | 95% | 7.5% |

Table 3

Sampling Reliability Objectives - Rideau Canal

| Groups / Seasons | Super Primary | | Primary | | Secondary | | Tertiary | |
|---|---|---|---|---|---|---|---|---|
| | C.L. | M.E. | C.L. | M.E. | C.L. | M.E. | C.L. | M.E. |
| Spring Shoulder | 95% | 5% | 95% | 7.5% | 95% | 7.5% | 95% | 7.5% |
| Peak | 99% | 3% | 99% | 3% | 99% | 3% | 95% | 3% |
| Fall Shoulder | 95% | 5% | 95% | 7.5% | 95% | 7.5% | 95% | 7.5% |

*C.L. represents Confidence Level

**M.E. represents Margin of Error

A certain number of individuals are expected to refuse to undergo the survey. Assumptions made are that 5% of visitors at a rural lockstation site and 15% of visitors at an urban lockstation site will refuse to undergo the survey. Furthermore, past experience indicates that a conservative response rate of 25% is to be expected for the return/mailback survey. Thus given a situation where the required sample size is 381, the application of these 2 assumptions (25% and 15%) would require 1793 individuals to be sampled. Sampling in this manner will provide for the minimum statistical accuracy required for each sub-population.

Application of the data to the formula produces the required sample size for the population and sub-population, and application of the assumptions to this figure produces the target sample size. Table 4 illustrates the above showing the minimum requried sample size and the target sample size in brackets.

Table 4

Required and Target Sample Sizes

| | Spring | Peak | Fall |
|---|---|---|---|
| Trent-Severn Waterway: | | | |
| Super Primary | 381 (1,793) | 1833 (8,624) | 379 (1,784) |
| Primary | 381 (1,793) | 1833 (8,626) | 379 (1,784) |
| Secondary | 170 (800) | 1826 (8,593) | 169 (795) |
| Tertiary | 169 (795) | 1054 (4,960) | 168 (791) |
| Rideau Canal: | | | |
| Super Primary | 379 (1,783) | 1825 (8,588) | 376 (1,769) |
| Primary | 168 (707) | 1048 (4,932) | 167 (785) |
| Secondary | 168 (791) | 1049 (4,936) | 167 (786) |
| Tertiary | 169 (795) | 1056 (4,446) | 169 (795) |

### 7.4.1 Sample Composition

The composition of a sample must be such that each population and sub-population is properly represented. In this survey this goal is ensured by sample stratification based upon the required sub-populations. Otherwise characteristics desired for analysis will not be present in the analysis. For example, if all the exit interviews were given in a 1 month period, the sample population would be restricted to the visitors in that month and would not represent the season user population. Thus the sample is broken down into three seasons and four classes of lockstations and sampling reliability is determined by the population for that class in each season.

### 7.4.2 Sample Selection

The number of interviews that can be accomplished in one day is determined by the station's attendance on weekdays and weekends. In each season attendance is allocated on a 75% on weekend and 25% on weekdays basis. Thus the number of interviews that can be accomplished in each day is different for each grouping in each season as attendance totals are different. Table 5 provides a rough breakdown of the number of short 3 - 5 minute interviews a consultant can expect to conduct per day per season per category.

Table 5

Interviews Per Day

| | Spring | Peak | Fall |
|---|---|---|---|
| Super Primary | 35 | 50 | 35 |
| Primary | 35 | 50 | 35 |
| Secondary | 20 | 40 | 20 |
| Tertiary | 10 | 35 | 10 |

Parks has decided that 50% of the target interview total should be on weekends and the other 50% of target interviews should occur during the week. This ensures proper representation for weekend and weekday visitors in the study. Selection of lockstations from each group was accomplished by numbering lockstations and using a random number table to select survey stations.

### 7.4.3 Summary

Selection of the lockstations is accomplished by:

1. Determining "n" or the minimum required sample for a season/group by applying the formula presented on page 28.
2. Randomly selecting a lockstation in the group.
3. Applying the assumptions to determine if the lockstation can provide the necessary number of target surveys to meet the minimum required sample.

The following is a hypothetical example which illustrates the selection process.

#### 7.4.3.1 Example

We are interested in the Tertiary Class of lockstations on the Trent-Severn Waterway. By random process we select Batawa, which has an annual attendance of 5292. Broken down seasonally on the 15%/75%/10% basis the attendance is:

| | |
|---|---|
| Spring Shoulder | 794 people |
| Peak | 3969 people |
| Fall | 529 people |

From the tables we see that in order for sampling reliability objectives and assumptions to be met in this tertiary class, 795 people must be contacted in the spring, 4960 in the summer and 791 visitors must be contacted in the fall. Thus even if every single visitor were

contacted by the surveyors, the lockstation does not have the required number of visitors to fulfill the survey design. Thus it is necessary to select at least one more station from this category.

By random process we select Otonabee which has an annual attendance of 6300. Broken down on the 15%/75%/10% basis the attendance is:

| | |
|---|---|
| Spring Shoulder | 945 |
| Peak | 4725 |
| Fall Shoulder | 630 |

Since there are two stations, we allocate one half of our required contacts to each station:

| | | | |
|---|---|---|---|
| Spring | 795 required contacts | / 2 stations = | 398 contacts/station |
| Peak | 4960 required contacts | / 2 stations = | 2480 contacts/station |
| Fall | 791 required contacts | / 2 stations = | 396 contacts/station |

Each station has more people in attendance during each season than the number of required contacts per season per station. Thus the sample design is still valid to this point.

Note that the sample design calls for a 50/50 split on allocation of interviews for weekend days and weekdays. Thus for each station:

Spring 398 / 2 = 199 interviews to be conducted on weekdays
= 199 interviews to be conducted on weekend days

Peak 2480 / 2 = 1240 interviews to be conducted on weekdays
= 1240 interviews to be conducted on weekend days

Fall 396 / 2 = 198 interviews to be conducted on weekdays
= 198 interviews to be conducted on weekend days

Past data indicates that 75% of attendance is on weekends and 25% on weekdays. Thus at each station attendance is as follows:

| | | WE | WD |
|---|---|---|---|
| Batawa | Spring | 595 | 198 |
| | Peak | 2977 | 992 |
| | Fall | 397 | 132 |
| Otonabee | Spring | 709 | 236 |
| | Peak | 3544 | 1181 |
| | Fall | 473 | 157 |

Comparison of the above attendance flows to the previous data on weekday/weekend day allocation indicates that on weekend days, attendance is high enough for the weekend interview allowance. However, in each season at both stations, attendance is insufficient to meet the weekday target sample size requirements. Thus it is necessary to select at least one more station from the tertiary category. The sample requirements are then equally divided amongst the three stations.

During the spring shoulder season at Batawa, approximately 595 visitors attend on weekend days and 198 visitors attend on weekdays. Assuming there are 8 weekend days in the spring season, one arrives at an average weekend day attendance figure of approximately 75 people. Assuming a third station has been selected, 265 target sample interviews would be allocated to Batawa for the spring. Requirements are that half (133) be allocated to weekend days. Thus if everybody who attended the lockstation on two weekend days was interviewed, sample requirements would be achieved. However, in Table 5 (7.4.2) Parks suggests approximately 10 interviews completed a day on a tertiary site. This achievement rate would mean the consultant would interview 80 people and fall 52 interviews short of the site allocation (assuming consultants interviewed on all 8 weekend days).

Parks has reasoned that since daily attendance is approximately 75 people, it is not unrealistic to assume that more than 10 people could be interviewed daily in this situation. Budgeting 5 to 7 days should be sufficient to reach the required sample size for Batawa. On weekdays, average attendance is approximately 10 persons/day. Because of the shortness of the season (approximately 19 weekdays) intereviews would have to be scheduled for most or all of the 19 weekdays for the target allotment to be achieved.

## 7.5 Station Selection

By use of this methodology, Parks has selected randomly the following stations for inclusion into the land-based visitor characteristics and use study:

Figure 16

Randomly Selected Stations

| | Trent-Severn | Rideau |
|---|---|---|
| Primary | Fenelon Falls | Long Island |
| | Kirkfield | Combined |
| Secondary | Scott's Mills | Narrows |
| | Lakefield | Chaffeys |
| Tertiary | Crowe Bay | Edmunds |
| | Couchiching | Upper Nicholsons |
| | Murray Canal | |

Parks has chosen enough stations via random selection such that all sample objectives are achievable. The consultant may however feel that sample objectives in a class would be more easily achieved (scheduling, logistics, staff hiring) if another station were added to the random

list. The consultant should confer with Parks in this situation. However, Parks expects no increase in miscellaneous costs or the total cost of the study as there would be a decrease in the work necessary at the other stations in that class.

## 7.6 Required Stations

In addition to this survey group, specific lockstations have been selected by Parks for inclusion into the land-based study. These stations have been selected in order to address specific management planning needs, operational requirements and to ensure a full geographic distribution in the study (some previous surveys have viewed the sub-populations to be North, Central and Southern geographic distribution of lockstations). Some of these stations are to be surveyed during the spring shoulder, peak and fall shoulder seasons according to the same confidence levels and margins of error as for those selected randomly. These stations are represented in Figure 16.

Figure 16

Required Lockstations: Spring, Peak and Fall Survey

| | Primary | Secondary | Tertiary |
|---|---|---|---|
| Trent-Severn | Peterborough* | Trenton | Ø |
| | Big Chute* | Youngs Point | |
| | Bobcaygeon | Gamebridge | |
| | Port Severn | | |
| Rideau Canal | Ottawa* | Chaffeys | Ø |
| | Smiths Falls | | |
| | Combined | | |
| | Jones Falls | | |

In addition to utilizing the sampling reliability objectives (Table 2 and Table 3) the consultants will make use of the same response rate and attendance assumptions as those outlined in the random sample design.

Because the random sample was conducted independantly of Parks' evaluation of what stations were required for the survey, some overlap in selection could, and did occur. Two stations Parks requires to be surveyed, Chaffey's Locks and Smiths Falls Combined, were also drawn at random. The only effect of this random event is to simplify field logistics for the consultant.

Additionally, one will note the fact the three super primary stations were not included in the random selection. Parks decided beforehand that a survey was to occur of all lockstations in the super primary category due to the outstanding characteristics the stations in this class possess.

## 8.0 CONCLUSION

This report contains the data analysis for the lockstation classification system proposed by the Policy and Research Section. The system was created as part of a socio-economic management information review for the Waterways. The function presently envisioned for this lockstation classification is to assist in simplifying research needs and data collection requirements for the Waterway and Canal. The second part of this report contains a sampling procedure for the 1987 land-based visitor characteristics and use study for lockstations along the Trent-Severn Waterway and Rideau Canal. The sampling procedure proposed makes use of the homogeneous nature of the lockstation classification system groupings to produce an efficient and unbiased sampling strategy for the study. For the consultant contracted to perform the study, this sampling procedure will serve as one possible approach to fulfilling the research objectives of the land-based visitor survey.

## 9.0 BIBLIOGRAPHY

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Revill, A.D. Analysis of Data Collected in a Study of Some Methods of Estimating Land-Based Attendance on the Rideau and Trent-Severn Canals. A report prepared for Environment Canada, Parks, Ontario Region. February, 1982.

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# Appendix A
## Trent-Severn Waterway Attendance Data Selection

### Preface

As pointed out in section 4.3.3 (Attendance), some reliability problems exist with the Trent-Severn attendance data. In 1986, a consultant reviewed the attendance data and produced revised visitor estimates along with an analysis of data problems and solutions. Readers should refer to this report: Trent-Severn Waterway Attendance Estimates by P.G. Whiting and Associates. This information is utilized in determining attendance figures suitable for use in the classification exercise. Taken from the report are Table 1, a list of revised total season attendance estimates for the years 1982-1985; and Table 2, an assessment of attendance estimates. While the report includes suggestions pertaining to the reliability of the data, it does not actually state which estimates are useful, only that they exist. The consultant leaves it to the reader to assess reliability and correctness using the information presented in the reports. Thus, the purpose of this analysis is to judge which estimates are useful for the land-based classification system.

Each lockstation will be examined individually. A figure will be chosen using the following information as guides: Table 1; Table 2; and the comments contained in the "overall comments" and "subjective overview" sections at the end of each lockstation attendance form study contained in Technical Appendix C of the Whiting report.

## TRENT-SEVERN WATERWAY ATTENDANCE TOTALS

| LOCKSTATION | TERTIARY | SECONDARY | PRIMARY |
|---|---|---|---|
| Murray Canal | 6991/85* | | |
| Trenton | 6795/82 | | |
| Sydney | 5762/82 | | |
| Glen Miller | 7188/85 | | |
| Batawa | 5292/82 | | |
| Trent | 4858/82 | | |
| Frankford | 5446/82 | | |
| Glen Ross | 1681/85 | | |
| Percy Reach | 5932/82 | | |
| Meyers | 7574/82 | | |
| Haigues Reach | 5235/82 | | |
| Ranney Falls | 5074/82 | | |
| Campbellford | 6073/82 | | |
| Crowe Bay | 8365/85 | | |
| Healey Falls | 7508/84 | | |
| Hastings | 6065/84 | | |
| Scotts Mills | | 19531/85 | |
| Ashburnham | | 11850/83 | |
| Peterborough | | | 128297/82 |
| Nassau Mills | | 16702/82 | |
| Otonabee | 6300/82 | | |
| Douro | 8500/82 | | |
| Sawyer Creek | 7250/82 | | |
| Lakefield | | 11688/83 | |

Tertiary = 0-9999
Secondary = 10000-19999
Primary = 20000+

*Attendance estimate/year estimate is from

## TRENT-SEVERN WATERWAY ATTENDANCE TOTALS

| LOCKSTATION | TERTIARY | SECONDARY | PRIMARY |
|---|---|---|---|
| Young's Point | | 13886/82 | |
| Burleigh | | 15834/82 | |
| Buckhorn | | 18445/82 | |
| Lindsay | | | 27827/84 |
| Rosedale | 4485/82 | | |
| Kirkfield | | | 44729/85 |
| Bolsover | 1939/85 | | |
| Talbot | | 16675/85 | |
| Gamebridge | | | 25732/85 |
| Couchiching | 7925/85 | | |
| Big Chute | | | 146326/85 |
| Port Severn | | 18192/83 | |
| Bobcaygeon | | | 65067/85 |
| Fenelon Falls | | | 150,000 |

Tertiary = 0-9999
Secondary = 10000-19999
Primary = 20000+

## RIDEAU WATERWAY ATTENDANCE TOTALS

| LOCKSTATION | TERTIARY | SECONDARY | PRIMARY |
|---|---|---|---|
| Ottawa | | | 187736 |
| Hartwells | | | 25040 |
| Hogs Back | | | 24113 |
| Black Rapids | 11859 | | |
| Long Island | 10499 | | |
| Burritts Rapids | | 16812 | |
| Nicholsons | 8189 | | |
| Clowes | | 14429 | |
| Merrickville | 10631 | | |
| Kilmarnock | | 14602 | |
| Edmunds | | 14453 | |
| Old Slys | 9198 | | |
| Smiths Falls | | 14802 | |
| Poonamalie | | 15038 | |
| Narrows | | 13626 | |
| Newboro | 9830 | | |
| Chaffeys | 11725 | | |
| Davis | | 13259 | |
| Jones Falls | | 16729 | |
| Upper Brewers | 10440 | | |
| Lower Brewers | | 14050 | |
| Kingston Mills | | | 19516 |

TABLE 1

TRENT-SEVERN WATERWAY
TOTAL SEASON ATTENDANCE ESTIMATES

| STATION NUMBER | STATION NAME | 1982 | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|
| 52 | Murray Canal | 6332 | 6641 | 6528 | 6991 |
| 1 | Trenton | 6795 | 10682 | 975 | n.a. |
| 2 | Sydney | 5762 | 6473 | n.a. | 20943 |
| 3 | Glen Miller | 5882 | 6667 | 3404 | 7188 |
| 4 | Batawa | 5292 | 5501 | 5883 | n.a. |
| 5 | Trent | 4858 | 5683 | n.a. | 12539 |
| 6 | Frankford | 5446 | 9335 | 5936 | n.a. |
| 7 | Glen Ross | 5455 | 2826 | n.a. | 1681 |
| 8 | Percy Reach | 5932 | 4964 | 3725 | 3711 |
| 9 | Meyers | 7574 | 1813 | n.a. | 1358 |
| 10 | Haigues Reach | 5235 | 2141 | 3817 | 6973 |
| 11 | Ranney Falls | 5074 | n.a. | 4537 | 2785 |
| 13 | Campbellford | 6073 | 2271 | 5108 | 6571 |
| 14 | Crowe Bay | 6427 | 7223 | 9482 | 8365 |
| 15 | Healey Falls | 5823 | 10635 | 7508 | 6057 |
| 18 | Hastings | 6105 | 5407 | 6065 | n.a. |
| 19 | Scott's Mills | 14616 | 15235 | 14014 | 19531 |
| 20 | Ashburnham | 11048 | 11850 | n.a. | n.a. |

... continued

n.a. = no estimate available or possible

TABLE 1

TRENT-SEVERN WATERWAY
TOTAL SEASON ATTENDANCE ESTIMATES

| STATION NUMBER | STATION NAME | 1982 | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|
| 21 | Peterborough | 128297 | 170917 | 99801 | n.a. |
| 22 | Nassau Mills | 16702 | 74926 | n.a. | n.a. |
| 23 | Otonabee | 6300 | n.a. | n.a. | n.a. |
| 24 | Duoro | 8500 | n.a. | n.a. | n.a. |
| 25 | Sawyer Creek | 7250 | n.a. | n.a. | n.a. |
| 26 | Lakefield | 14359 | 11668 | n.a. | n.a. |
| 27 | Young's Point | 13886 | n.a. | n.a. | n.a. |
| 28 | Burleigh | 15834 | 13119 | 23665 | n.a. |
| 31 | Buckhorn | 18445 | 8779 | 3115 | n.a. |
| 33 | Lindsay | 29888 | 24456 | 27827 | n.a. |
| 35 | Rosedale | 4485 | 4056 | 2236 | n.a. |
| 36 | Kirkfield | 61320 | 38147 | 32151 | 44729 |
| 37 | Bolsover | 8062 | 2995 | 2350 | 1939 |
| 38 | Talbot | 20271 | 11911 | 13349 | 16675 |
| 41 | Gamebridge | 19609 | 11683 | 17055 | 25732 |
| 42 | Couchiching | 13793 | 10600 | 8066 | 7925 |
| 44 | Big Chute | 105359 | 81860 | 125573 | 146326 |
| 45 | Port Severn | 22493 | 18192 | 16626 | 13760 |

n.a. = no estimate available or possible

TABLE 2

ASSESSEMNT OF ATTENDANCE ESTIMATES

| STATION NUMBER | STATION NAME | RELIABILITY OF DATA 1983 | 1984 | 1985 | RELIABILITY OF FORMULA | USEABLE ESTIMATE |
|---|---|---|---|---|---|---|
| 52 | Murray Canal | G | G | G | G | yes |
| 1 | Trenton | M | P | n.a. | U | no |
| 2 | Sydney | P | n.a. | P | P | no |
| 3 | Glen Miller | P | M | G | G | yes |
| 4 | Batawa | P | P | n.a. | G | yes |
| 5 | Trent | G | P | M | P | maybe |
| 6 | Frankford | G | P | n.a. | G | yes |
| 7 | Glen Ross | M | P | P | P | maybe |
| 8 | Percy Reach | P | M | M | U | yes |
| 9 | Meyers | M | n.a. | P | P | maybe |
| 10 | Haigues Reach | P | M | M | P | yes |
| 11 | Ranney Falls | n.a. | P | G | G | yes |
| 13 | Campbellford | P | P | P | G | yes |
| 14 | Crowe Bay | P | M | M | G | yes |
| 15 | Healey Falls | M | M | M | G | yes |
| 18 | Hastings | G | G | n.a. | G | yes |
| 19 | Scott's Mills | G | G | G | G | yes |
| 20 | Ashburnham | G | n.a. | n.a. | P | maybe |

... continued

P = Poor
M = Marginal
G = Good
U = Uncertain

n.a. = no estimate available or possible

TABLE 2

ASSESSEMNT OF ATTENDANCE ESTIMATES

| STATION NUMBER | STATION NAME | RELIABILITY OF DATA 1983 | 1984 | 1985 | RELIABILITY OF FORMULA | USEABLE ESTIMATE |
|---|---|---|---|---|---|---|
| 21 | Peterborough | M | G | n.a. | P | maybe |
| 22 | Nassau Mills | M | n.a. | n.a. | P | no |
| 23 | Otonabee | n.a. | n.a. | n.a. | P | no |
| 24 | Duoro | n.a. | n.a. | n.a. | P | no |
| 25 | Sawyer Creek | n.a. | n.a. | n.a. | P | no |
| 26 | Lakefield | G | n.a. | n.a. | G | yes |
| 27 | Young's Point | P | P | n.a. | U | no |
| 28 | Burleigh Falls | M | G | n.a. | G | yes |
| 31 | Buckhorn | M | M | n.a. | P | no |
| 32 | Bobcaygeon | n.a. | n.a. | n.a. | U | no |
| 33 | Lindsay | G | G | n.a. | G | yes |
| 34 | Fenelon Falls | n.a. | n.a. | n.a. | U | no |
| 35 | Rosedale | G | G | n.a. | U | maybe |
| 36 | Kirkfield | M | M | G | G | yes |
| 37 | Bolsover | G | G | G | P | maybe |
| 38 | Talbot | G | M | G | G | yes |
| 41 | Gamebridge | G | M | G | G | yes |
| 42 | Couchiching | G | G | G | G | yes |
| 44 | Big Chute | G | G | G | G | yes |
| 45 | Port Severn | G | M | G | P | yes |

P = Poor
M = Marginal
G = Good
U = Uncertain

n.a. = no estimate available or possible

## Station Attendance Evaluation

Station: Murray Canal ~~East~~

Table 2 indicates that the reliability of the data (RD) and the reliability of the formula (RF) are considered good and the 1985 information was considered complete. Therefore, the 1985 figure of 6991 was chosen.

Station: Trenton

Whiting rates all the estimates poor except for 1983. However, as Table 2 indicates no useable estimate exists from 1983-1985, the 1982 value of 6795 obtained in the separate 1982 study of land-based visitation will be used.

Station: Sydney

Table 2 indicates that no useable estimate is available so the 1982 attendance figure of 5762 will be used.

Station: Glen Miller

Whiting feels that while there are many assumptions incorporated into the figures, one is useable. As the RD for 1985 is good and the RF is good, the 1985 total of 7188 will be used.

Station: Batawa

Whiting rates the RD poor for three years 1983-1985 but Table 2 indicates yes to the query of a useable estimate. Since it is unclear which value is useable given the above circumstance, the 1982 value of 5292 will be used in the classification exercise.

Station: Trent

Whiting suspects that the RF is poor producing values which "should be treated with caution". Therefore, the 1982 value of 4858 will be utilized in the study.

Station: Frankford

The RF is good and data from year 1983 is rated good. But in the subjective overview (which includes the field staff's opinion), the 1983 figure is rated as "too high". Therefore the 1982 value will be used in default.

Station: Glen Ross

Whiting warns that estimates produced should be treated with caution due to poor RF. However in the overview, the feeling is the 1985 value of 1681 is approximately correct. This value will be used in the study.

Station: Percy Reach

Whiting states that all the estimates are crude and not reliable. But Table 2 states that there is a useable estimate. As difficult to interpret this dichotomy will utilize the 1982 value of 5932.

Station: Meyers

Table 2 indicates that both the RF and the RD are marginal to poor. Whiting states the 1983-1985 "estimates cannot be considered reliable". Therefore the 1982 attendance estimate will be used in the study.

Station: Haigues

(Whiting indicated "yes" to a useable estimate and comments that the "estimates appear to reflect perceived levels of attendance"). Table 2 indicates that the RF and the RD is poor and marginal. However, Whiting also states that the estimates are not highly reliable. The 1982 value of 5235 for attendance will be used.

Station: Ranney Falls

Whiting believes the 83-85 estimates are low so will use the 1982 value of 5074 for attendance.

Station: Campbellford

Table 2 indicates that the RD is poor for the three years 1983-1985. Whiting indicates the estimates are unreliable. As the 1982 visitor attendance figure is 6073, which is in the 6000-7000 range considered appropriate for the station by Whiting, it will be used in the lockstation exercise.

Station: Crowe Bay

The RD for 1985 is marginal but RF is good and it is believed that the year 1985 estimate is appropriate. Therefore, the figure of 8365 will be used in the classification exercise.

Station: Healey Falls

Many difficulties exist with the attendance estimates at this station. Whiting states that the estimates should be in the 8000 range. Therefore will use the 1984 visitor estimate of 7508.

Station: Hastings

The RD is good for the year 1984 and RF is good. Therefore, the visitor estimate of 6065 for 84 will be used in the classification exercise.

Station: Scott's Mills

Table 2 indicates that everything is considered good thus the 1985 value of 19531 will be used for the study.

Station: Ashburnham

The RD for the year 1983 is good so the figure of 11850 from 1983 will be used in the study.

Station: Peterborough

There appears to be mistakes in Whiting's analysis. The 1982 figure of 128297 will be used in the exercise.

Station: Nassau Mills

The RF and RD is all poor to marginal so will use the 1982 value of 16702 in the classification exercise.

Station: Otonabee

No attendance estimates are available for the years 1983-1985 so will use the 1982 value of 6300 for visitor attendance.

Station: Douro

No attendance estimates are available for the years 1983-1985 so will use the 1982 value of 8500 for visitor attendance.

Station: Sawyer Creek

No attendance estimates are available for the years 1983-1985 so will use the 1982 figure of 7250 for visitor attendance.

Station: Lakefield

The RF is good and the 1983 data is rated good so the resultant figure of 11688 for the year 1983 will be used in the study.

Station: Young's Point

No attendance estimates are available for the years 1983-1985 so will use the 1982 value of 13886 for visitor attendance.

Station: Burleigh Falls

The 1984 value is considered too high and the 1983 value is considered too low so will use the 1982 value of 15834 in the classification exercise.

Station: Buckhorn

Table 2 indicates poor results from the data and formula for the years 1983-1985 so will use the 1982 figure of 18445 for visitor attendance.

Station: Lindsay

The most recent attendance estimate available, the 1984 figure of 27827, will be used in the analysis as both data and formula are considered good for this year.

Station: Rosedale

Whiting feels the attendance estimates should be over 4000. Will use the 1982 value of 4485 for the study. The RD for other years is good but the RF, from which the attendance estimate is generated, is uncertain.

Station: Kirkfield

Table 2 indicates that in 1985 the RD is good and the RF is good. Whiting also believes the estimate of 44729 to be reasonably accurate.

Station: Bolsover

The 1985 estimate of 1939 is considered to be at the correct level by Whiting. Problems with the formula exist but Whiting compensated for this in producing the visitor attendance estimates.

Station: Talbot

Table 2 indicates the 1985 RD and RF to be good. Whiting also considers the value of 16675 to be correct.

Station: Gamebridge

Table 2 indicates that the RF and RD is good. Thus will use the 1985 figure of 25732 for visitor attendance.

Station: Couchiching

Table 2 indicates that the RF and RD is good. The 1985 estimate of 7925 for visitor attendance will be used in the study.

Station: Big Chute

Table 2 indicates that the RF and RD is good. The 1985 estimate of 146326 for visitor attendance will be used in the study.

Station: Port Severn

Whiting indicates that the highest reliability exists with the data from 1983 and that the 1983 visitor estimate is appropriate. The attendance estimate for the year is 18192.

Station: Bobcaygeon

The figure of 65067 for visitor attendance comes from a study performed in 1985 by P.G. Whiting.

Station: Fenelon Falls

A.D. Revill produced an attendance figure of 320,000 for this lockstation. This figure is regarded as high by Parks staff. They have suggested that a visitor sum of 150,000 would be more appropriate.

# Appendix B
## Day Use Market Area Data Compilation

This appendix contains the maps and data for section 4.3.4, Day Use Market Area. For each lockstation, a map was drawn which depicted the lockstation, a secton of the Waterway, local townships and population centers. The maps were traced from a map of provincial electoral districts published by the Ontario Ministry of Natural Resources. Accompanying each map is a population list. The population figures were obtained from the Ontario Municipal Directory (1985) and the Canada Almanac (1985). All "total" figures are approximate; there is a 5 to 10% error because of estimation difficulties (i.e. no census information available for villages or townsites, etc.). In some cases a proportion of the total township estimate was used reflecting the location of the 40 km boundary.

## RIDEAU WATERWAY 40 KM POPULATION TOTALS

### SUMMARY

| LOCKSTATION | POPULATION |
|---|---|
| Ottawa (1-8) | 788931 + (including Quebec) |
| Hartwells (9-10) | 788931 + (including Quebec) |
| Hogs Back (11-12 | 788931 + (including Quebec) |
| Black Rapids (13) | 811619 + (including Quebec) |
| Long Island (14-16) | 811619 + (including Quebec) |
| Burritts Rapids (17) | 183117 |
| Nicholsons and Clowes (18-20) | 183117 |
| Merrickville (21-23) | 156423 |
| Kilmarnock (24) | 127405 |
| Edmonds (25) | 127405 |
| Old Slys (26,27) | 127405 |
| Combined and Detached (28-31) | 127405 |

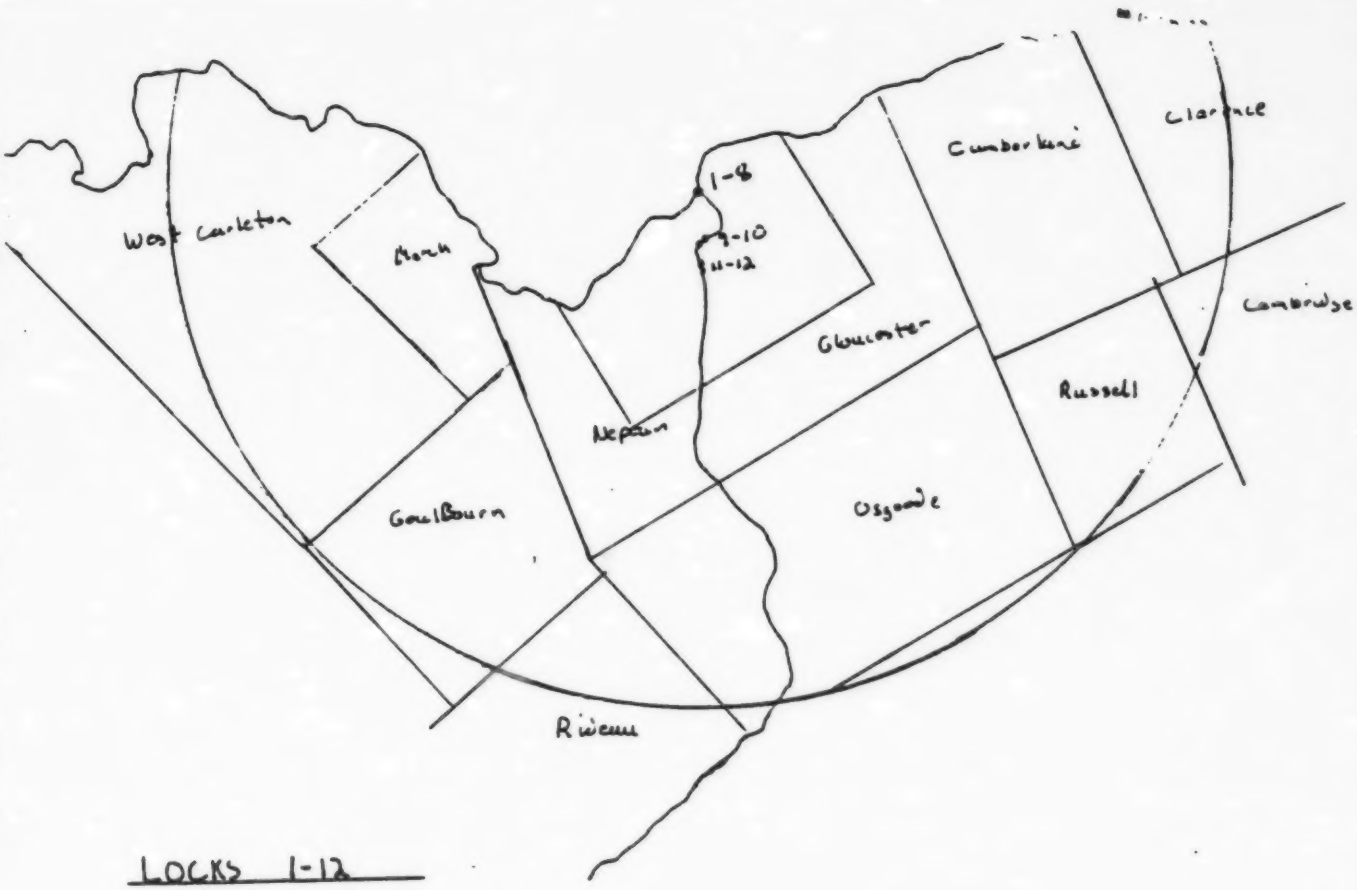
| LOCKSTATION | POPULATION |
|---|---|
| Poonamalie (32) | 127405 |
| Beveridge (33-34) | 87300 |
| Narrows (35) | 74698 |
| Newboro (36) | 74698 |
| Chaffeys (37) | 229579 |
| Davis (38) | 229579 |
| Jones Falls (39-42) | 164599 |
| Upper Brewers (43-44) | 141153 |
| Lower Brewers (45) | 141153 |
| Kingston Mills (46-49) | 146715 |

# TRENT-SEVERN WATERWAY 40 KM POPULATION TOTALS

## SUMMARY

| LOCKSTATION | POPULATION |
|---|---|
| Trenton (1) | 128993 |
| Sydney (2) | 128993 |
| Glen Miller (3) | 128993 |
| Batawa (4) | 128993 |
| Trent (5) | 128993 |
| Frankford (6) | 128993 |
| Glen Ross (7) | 128993 |
| Percy Reach (8) | 222259 |
| Meyers (9) | 222259 |
| Haigues Reach (10) | 222259 |
| Ranney Falls (11-12) | 222259 |
| Campbellford (13) | 222259 |
| Crowe Bay (14) | 222259 |
| Healey Falls (15-17) | 222259 |
| Hastings (18) | 185199 |
| Scotts Mills (19) | 185199 |
| Ashburnham (20) | 185199 |
| Peterborough (21) | 185199 |
| Nassau Mills (22) | 185199 |
| Otonabee (23) | 185199 |
| Douro (24) | 185199 |
| Sawyer Creek (25) | 185199 |
| Lakefield (26) | 185199 |
| Young's Point (27) | 139505 |
| Burleigh (28) | 139505 |
| Lovesick (30) | 139505 |
| Buchhorn (31) | 139505 |

| LOCKSTATION | POPULATION |
|---|---|
| Bobcaygeon (32) | 134069 |
| Fenelon Falls (34) | 57213 |
| Rosedale (35) | 57213 |
| Kirkfield (36) | 114290 |
| Bolsover (37) | 114290 |
| Talbot (38) | 114290 |
| Portage (39) | 114290 |
| Thorah (40) | 114290 |
| Gamebridge (41) | 114290 |
| Couchiching (42) | 93151 |
| Swift Rapids (43) | 101371 |
| Big Chute (44) | 95306 |
| Port Severn (45) | 100812 |


West Carleton
March
1-8
9-10
11-12
Cumberland
Clarence
Cambridge
Gloucester
Russell
Nepean
Osgoode
Gaulbourn
Rideau

LOCKS 1-12

Population: Lockstations 1-12
: Ottawa, Hartwells, Hogs Back

1) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| All | 599688 |

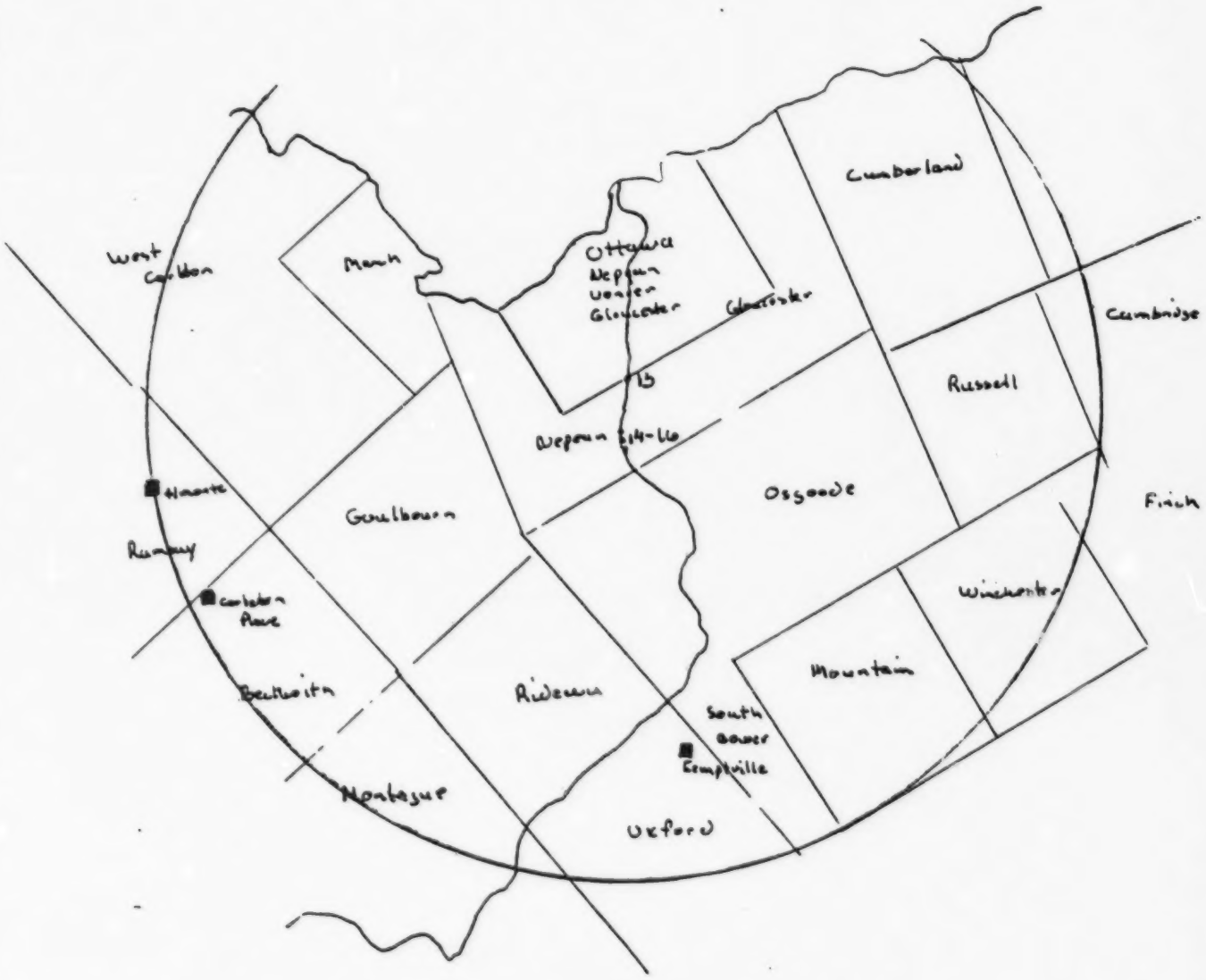
2) United Counties of Prescott and Russell

| | |
|---|---|
| Rockland | 4869 |
| Russell | 7164 |
| Clarence (all) | 7360 |

3) Quebec

| | |
|---|---|
| Hull | 55100 |
| Aylmer | 27100 |
| Gatineau | 76100 |
| Buckingham | 8000 |
| Hull | 3550 |
| TOTAL | 788931 |

LOCKS 13-16


West Carleton
March
Ottawa
Nepean
Vanier
Gloucester
Gloucester
Cumberland
Cambridge
13
Russell
Nepean 14-16
Osgoode
Finch
Almonte
Gaulbourn
Ramsay
Carleton Place
Winchester
Mountain
Beckwith
Rideau
South Gower
Kemptville
Montague
Oxford

Population: Lockstations 13-16
: Black Rapids, Long Island

1) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| All | 599688 |

2) United Counties of Prescott and Russell

| | |
|---|---|
| Russell | 7164 |

3) United Counties of Stormont, Dundas, Glengarry

| | |
|---|---|
| Chesterville | 1427 |
| Winchester | 2055 |
| Mountain | 3004 |
| Winchester (all) | 3089 |

4) United Counties of Leeds and Grenville

| | |
|---|---|
| Kemptville | 2496 |
| Merrickville | 994 |
| South Gower | 1454 |
| Oxford (all) | 4420 |

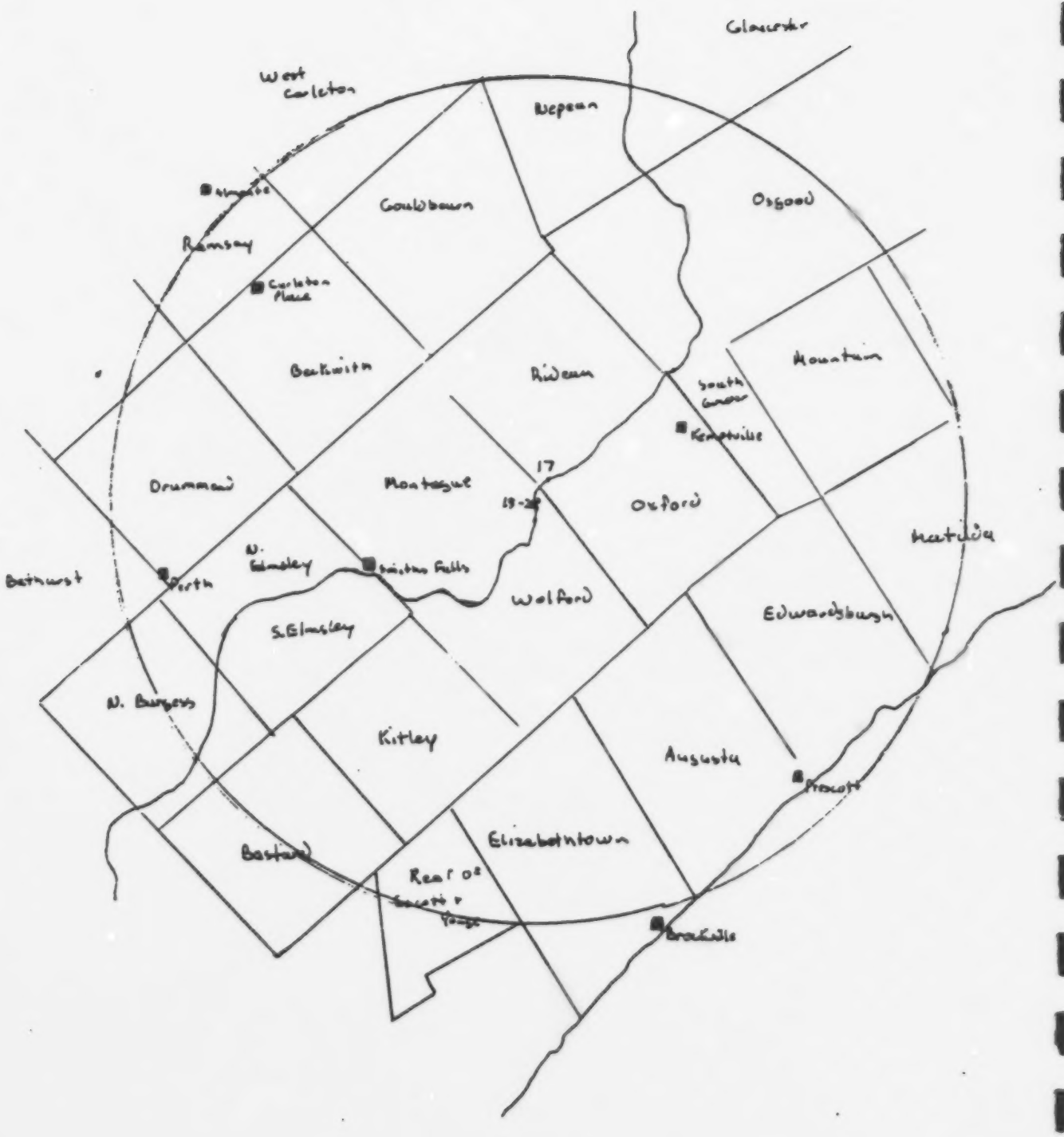
5) County of Lanark

| | |
|---|---|
| Almonte | 4028 |
| Carleton Place | 6360 |
| Montague (.4) | 1470 |
| Beckwith (all) | 3262 |
| Ramsay (.3) | 858 |

6) Quebec

| | |
|---|---|
| Hull | 55100 |
| Aylmer | 27100 |
| Gatineau and Point Gatineau | 76100 |
| Buckingham | 8000 |
| Hull | 3550 |
| TOTAL | 811619 |

LOCKS 17-20


Glaucester
West Carleton
Nepean
Almonte
Goulbourn
Osgood
Ramsay
Carleton Place
Beckwith
Rideau
Mountain
South Gower
Kemptville
Drummond
Montague
17
19-20
Oxford
Merrickville
N. Elmsley
Smiths Falls
Bathurst
Perth
Wolford
S. Elmsley
Edwardsburgh
N. Burgess
Kitley
Augusta
Prescott
Elizabethtown
Bastard
Rear of Yonge
Brockville

Population: Lockstations 17-20
: Burritts Rapids, Nicholsons and Clowes

1) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| Nepean (.5) | 46357 |
| Gloucester | 5000 |
| Goulbourn | 11824 |
| Osgood (all) | 10850 |

2) County of Lanark

| | |
|---|---|
| Smiths Falls | 9118 |
| Almonte | 4028 |
| Carleton Place | 6360 |
| Perth | 5699 |
| Beckwith | 3262 |
| Drummond (all) | 2246 |
| Montague | 3676 |
| N. Burgess (.5) | 381 |
| N. Elmsley | 2202 |
| Ramsay (.6) | 1717 |

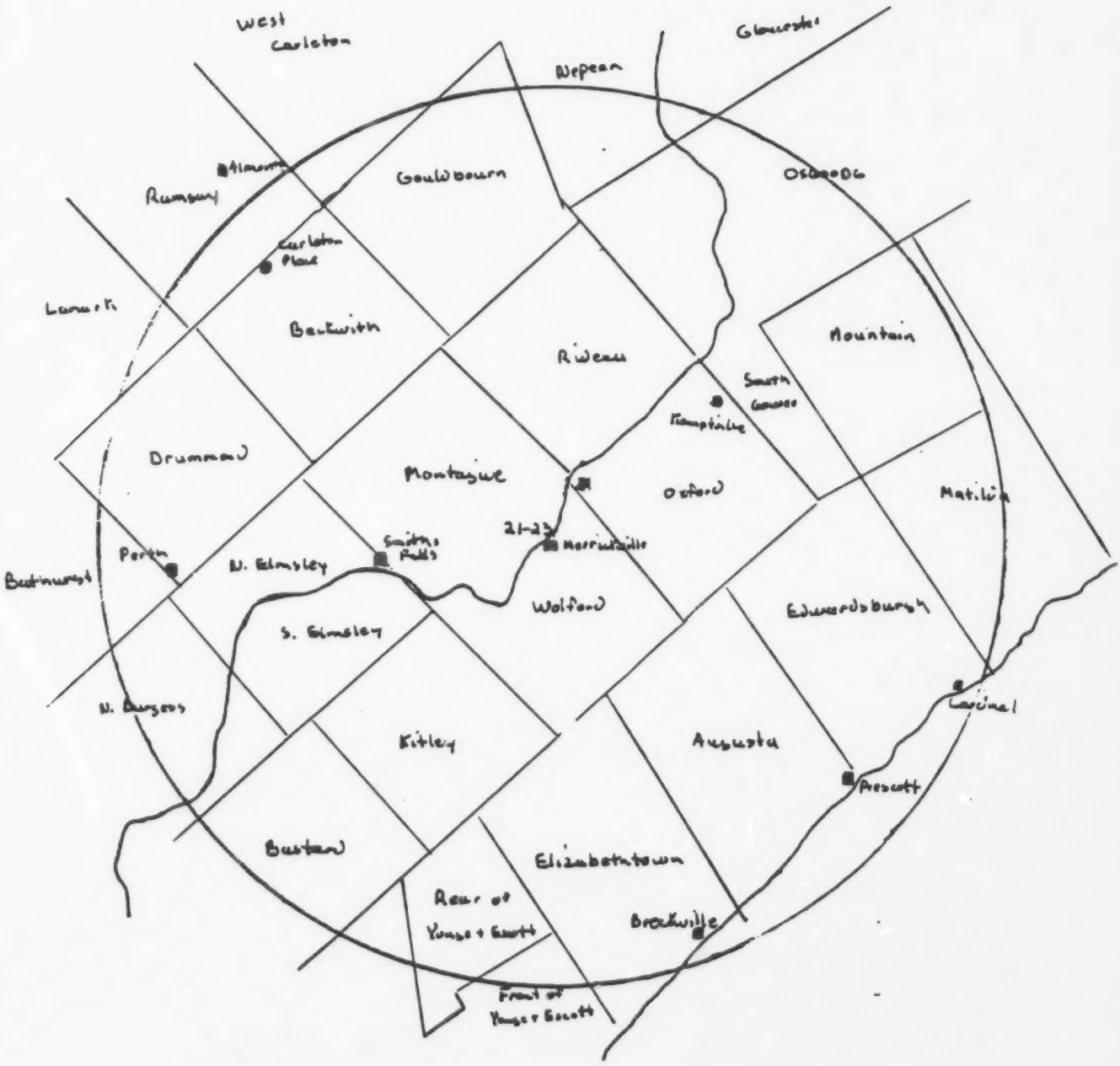
3) United Counties of Stormont, Dundas and Glengarry

| | |
|---|---|
| Matilda | 3161 |
| Mountain | 3004 |
| Iroquois | 1159 |

4) United Counties of Leeds and Grenville

| | |
|---|---|
| Brockville | 20760 |
| Prescott | 4584 |
| Kemptville | 2496 |
| Cardinal | 1651 |
| Merrickville | 994 |
| | |
| Augusta | 6721 |
| Bastard | 1158 |
| Edwardsburgh | 4409 |
| Elizabethtown | 7067 |
| Kitley | 1916 |
| Oxford | 4420 |
| Rear of Escott and Young | 1482 |
| South Elmsley | 2659 |
| South Gower | 1454 |
| Wolford | 1284 |
| | |
| TOTAL | 183117 |

LOCKS 21-23


West Carleton
Gloucester
Nepean
Almonte
Rumsey
Goulbourn
Osgoode
Carleton Place
Lanark
Beckwith
Rideau
Mountain
South Gower
Kemptville
Drummond
Montague
Oxford
Matilda
21-23
Merrickville
Perth
Smiths Falls
N. Elmsley
Bathurst
Wolford
Edwardsburgh
S. Elmsley
Cardinal
N. Burgess
Kitley
Augusta
Prescott
Bastard
Elizabethtown
Rear of Yonge + Escott
Brockville
Front of Yonge + Escott

Population: Lockstations 21-23
: Merrickville

1) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| Nepean | 20000 |
| Goulbourn | 11824 |
| Osgoode | 7000 |
| Rideau | 10017 |

2) County of Lanark

| | |
|---|---|
| Smiths Falls | 9118 |
| Almonte | 4028 |
| Carleton Place | 6360 |
| Perth | 5699 |
| Beckwith | 3262 |
| Drummond | 2246 |
| Montague | 3676 |
| North Burgess (all) | 763 |
| North Elmsley | 2202 |
| Ramsay (.5) | 1431 |

3) United Counties of Stormont, Dundas and Glengarry

| | |
|---|---|
| Mountain | 3004 |
| Matilda (.5) | 1580 |

# LOCKS 32-24

Almonte
Ramsey
Goulbourn
Carleton Place
Lanark
Beckwith
Rideau
South Gower
Kemptville
Oxford
Montague
Drummond
Perth
Bathurst
North Elmsley
32
Smiths Falls
24
Wolford
South Elmsley
Edwardsburgh
North Burgess
Kitley
Augusta
Prescott
N. Crosby
Bastard
Elizabethtown
Rear of Yonge & Escott
Brockville
S. Crosby
Rear of L & L

4) United Counties of Leeds and Grenville

| | |
|---|---|
| Brockville | 20760 |
| Prescott | 4584 |
| Kemptville | 2496 |
| Cardinal | 1651 |
| Merrickville | 994 |
| | |
| Augusta | 6721 |
| Bastard (all) | 2316 |
| Edwardsburgh | 4409 |
| Elizabethtown | 7067 |
| Kitley | 1916 |
| Oxford | 4420 |
| Rear of Yong and Escott | 1482 |
| S. Elmsley | 2659 |
| S. Gower | 1454 |
| Wolford | 1284 |

5) United Counties of Stormont, Dundas and Glengarry

| | |
|---|---|
| Mountain | 3004 |
| Matilda (.5) | 1580 |
| TOTAL | 156423 |

Population: Lockstations 24-32
: Kilmarnock, Edmonds, Old Slys, Combined, Detached, Poonamalie

1) United Counties of Leeds and Grenville

| | |
|---|---|
| Brockville | 20760 |
| Prescott | 4584 |
| Kemptville | 2496 |
| Merrickville | 994 |
| Newboro | 276 |
| Westport | 676 |
| | |
| Augusta | 6721 |
| Bastard | 2316 |
| Edwardsburgh (.5) | 2204 |
| Elizabethtown | 7067 |
| Kitley | 1916 |
| N. Crosby (all) | 800 |
| Oxford | 4420 |
| Rear of Leeds and Lansdowne (.25) | 617 |
| Rear of Younge and Escott | 1428 |
| S. Crosby (.5) | 762 |
| South Elmsley | 2659 |
| South Gower | 1454 |
| Wolford | 1284 |

2) Counties of Lanark

| | |
|---|---|
| Smiths Falls | 9118 |
| Almonte | 4028 |
| Carleton Place | 6360 |
| Perth | 5699 |
| Lanark | 303 |
| Bathurst | 2626 |
| Beckwith | 3262 |
| Drummond | 2246 |
| Lanark (all) | 1113 |
| Montague | 3676 |
| North Burgess | 763 |
| North Elmsley | 2202 |
| Dalhousie (.2) | 234 |

3) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| Goulbourn | 11824 |
| Rideau | 10017 |
| TOTAL | 127405 |

LOCKS 33-34

Almonte
Goulbourn
Ramsay
Carleton Place
Lanark
Beckwith
Rideau
Kemptville
Dalhousie
Drummond
Montague
Oxford
N. Sherbrooke
Perth
Bathurst
North Elmsley
Smiths Falls
33
34
South Elmsley
Wolford
S. Sherbrooke
CSC
N. Burgess
Kitley
Augusta
N. Crosby
Bastard
Elizabethtown
Rear of Yonge Escott
Beckford
S. Crosby
Rear of L+L
Front of Yonge
Front of Escott

Population: Lockstations 33-34
: Beveridges

1) United Counties of Leeds and Grenville

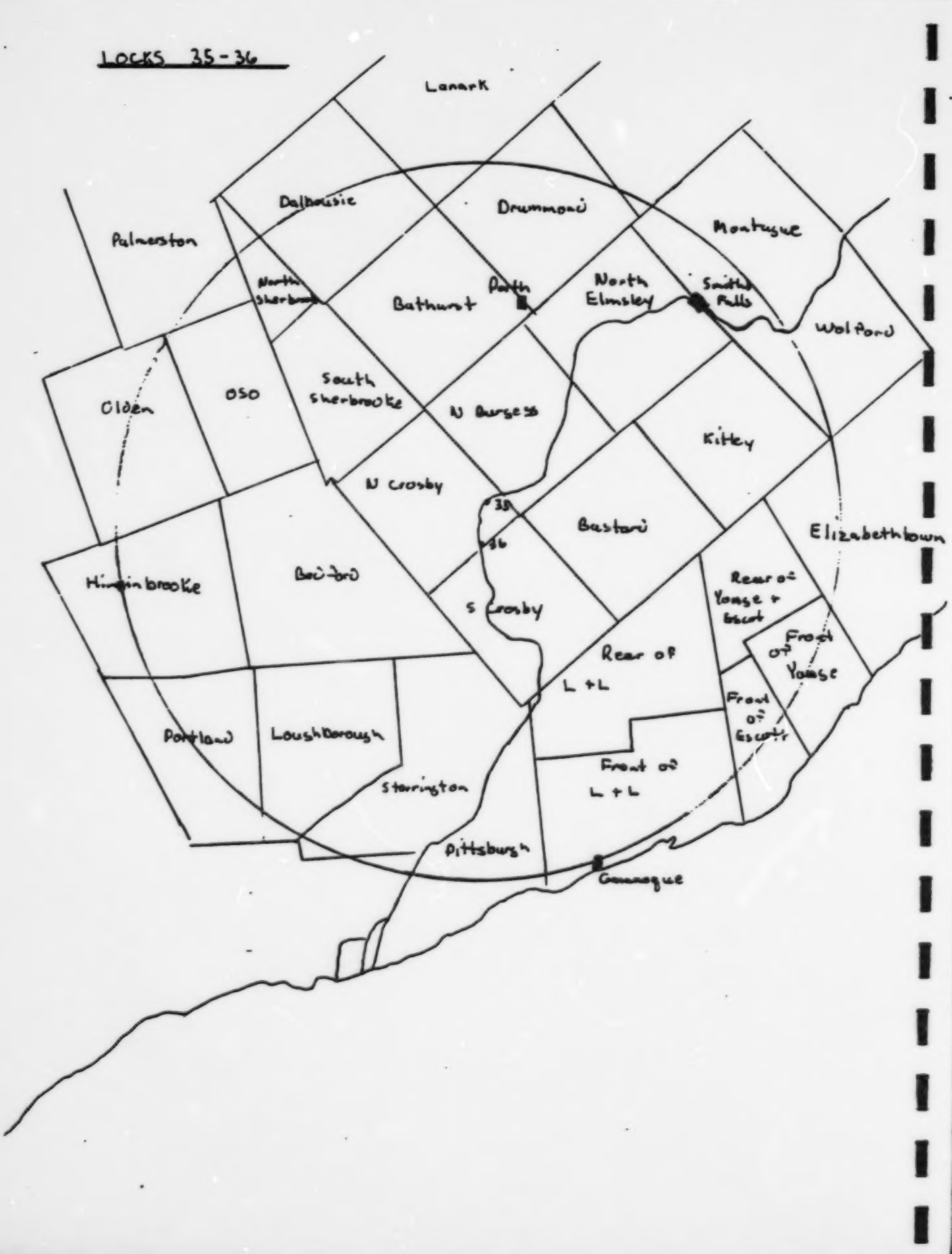
| | |
|---|---|
| Kemptville | 2496 |
| Merrickville | 994 |
| Newboro | 276 |
| Westport | 676 |
| | |
| Bastard | 2316 |
| Elizabethtown (.5) | 3533 |
| Kitley | 1916 |
| North Crosby | 800 |
| Oxford on Rideau (all) | 4420 |
| Rear of Leeds and Lansdowne (.3) | 740 |
| Rear of Yonge and Escott | 1482 |
| South Crosby | 1524 |
| South Elmsley | 2659 |
| Wolford | 1284 |

2) Regional Municipality of Ottawa-Carleton

| | |
|---|---|
| Goulbourn (.5) | 5912 |
| Rideau (all) | 10017 |

3) County of Lanark

| | |
|---|---|
| Smiths Falls | 9118 |
| Almonte | 4028 |
| Carleton Place | 6360 |
| Perth | 5699 |
| Lanark | 803 |
| Beckwith | 3262 |
| Drummond | 2246 |
| Lanark | 1113 |
| Dalhousie and North Sherbrooke | 936 |
| Montague | 3676 |
| North Burgess | 763 |
| North Elmsley | 2202 |
| Ramsey | 2862 |
| South Sherbrooke | 561 |
| Bathurst | 2626 |
| TOTAL | 87300 |


LOCKS 35-36
Lanark
Dalhousie
Drummond
Montague
Palmerston
North Sherbrooke
Bathurst
Perth
North Elmsley
Smiths Falls
Wolford
Olden
OSO
South Sherbrooke
N Burgess
Kitley
N Crosby
35
36
Bastard
Elizabethtown
Hinchinbrooke
Bedford
S Crosby
Rear of Yonge & Escott
Front of Yonge
Rear of L + L
Front of Escott
Portland
Loughborough
Storrington
Front of L + L
Pittsburgh
Gananoque

Population: Lockstations 35-36
: Narrows, Newboro

1) County of Frontenac

| | |
|---|---|
| Bedford | 839 |
| Hinchinbrooke (all) | 1125 |
| Loughborough | 3398 |
| Olden (all) | 774 |
| Oso | 1153 |
| Pittsburgh (all) | 9567 |
| Portland (.7) | 2975 |
| Storrington | 3225 |

2) County of Lanark

| | |
|---|---|
| Perth | 5699 |
| Smiths Falls | 9188 |
| Lanark | 803 |
| North Sherbrooke | 936 |
| Dalhousie | |
| North Burgess | 763 |
| North Elmsley | 2202 |
| South Sherbrooke | 561 |
| Bathurst | 2626 |
| Drummond | 2246 |
| Lanark | 400 |

3) United Counties of Leeds and Grenville

| | |
|---|---|
| Gananoque | 4844 |
| Westport | 675 |
| Newboro | 276 |
| | |
| Bastard | 2316 |
| Elizabethtown (.4) | 2826 |
| Front of Escott (all) | 1132 |
| Front of Yonge (.5) | 1010 |
| Front of Leeds and Lansdowne | 4289 |
| Kitley | 1916 |
| N. Crosby | 800 |
| Rear of Leeds and Lansdowne | 2468 |
| Rear of Yonge and Escott | 1482 |
| South Crosby | 1524 |
| Wolford | 1659 |
| | |
| TOTAL | 74698 |

LOCKS 37-38
Perth
North Elmsley
Smiths Falls
Bathurst
South Elmsley
South Sherbrooke
North Burgess
Kitley
Olden
Oso
North Crosby
Westport
Newboro
Bastard
Elizabethtown
Rear of Yonge + Escott
Hinsinbrooke
Bedford
South Crosby
37
38
Rear of Leeds + Lansdowne
Front of Yonge
Front of Escott
Front of Leeds + Lansdowne
Portland
Loughborough
Storrington
Pittsburgh
Gananoque
Kingston
Howe Island
Kingston

Population: Lockstations 37-38
: Chaffeys, Davis

1) United Counties of Leeds and Grenville

| | |
|---|---|
| Gananoque | 4844 |
| Westport | 676 |
| Newboro | 276 |
| Bastard | 2316 |
| Elizabethtown | 2826 |
| Front of Escott | 1132 |
| Front of Leeds and Lansdowne | 4289 |
| Front of Yonge | 2020 |
| Kitley | 1916 |
| North Crosby | 800 |
| Rear of Leeds and Lansdowne | 2468 |
| Rear of Yonge and Escott | 1482 |
| South Crosby | 1524 |
| South Elmsley | 2659 |

2) County of Lanark

| | |
|---|---|
| Perth | 5699 |
| Bathurst (all) | 2626 |
| North Burgess | 763 |
| North Elmsley (all) | 2202 |
| South Sherbrooke | 561 |

3) County of Frontenac

| | |
|---|---|
| Kingston | 60408 |
| Bedford | 839 |
| Hichinbrooke (all) | 1125 |
| Howe Island | 286 |
| Kingston (all) | 29561 |
| Loughborough | 3398 |
| Oso (all) | 1153 |
| Pittsburgh | 9567 |
| Portland | 4240 |
| Storrington | 3225 |
| TOTAL | 229579 |

LOCKS 39-42

Beckwith
North Elmsley
Smiths Falls
Bathurst
South Elmsley
South Sherbrooke
North Burgess
S. Burgess
Kitley
North Crosby
Bastard
Rear of Yonge + Escott
Hinchinbrooke
Bedford
South Crosby
Rear of Leeds + Lansdowne
Front of Yonge
Front of Escott
Portland
Loughborough
Storrington
Front of Leeds and Lansdowne
Pittsburgh
Gananoque
Kingston
Kingston

Population: Lockstations 39-42
: Jones Falls

1) County of Frontenac

| | |
|---|---|
| Kingston | 60408 |
| Bedford | 839 |
| Hinchinbrooke | 562 |
| Howe Island | 286 |
| Kingston (all) | 29561 |
| Loughborough | 3398 |
| Pittsburgh | 9567 |
| Portland (all) | 4250 |
| Storrington | 3225 |
| Wolfe Island | 1067 |

2) County of Lanark

| | |
|---|---|
| Smiths Falls | 9118 |
| Perth | 5699 |
| Bathurst | 1313 |
| North Burgess | 763 |
| North Elmsley (all) | 2202 |
| South Sherbrooke (all) | 561 |

3) United Counties of Leeds and Grenville

| | |
|---|---|
| Gananoque | 4844 |
| Westport | 676 |
| Bastard and South Burgess | 2316 |
| Elizabethtown (.8) | 5654 |
| Front of Escott | 1132 |
| Front of Yonge | 2020 |
| Front of Leeds and Lansdowne | 4289 |
| Kitley | 1916 |
| North Crosby | 800 |
| Rear of Leeds and Lansdowne | 2468 |
| Rear of Yonge and Escott | 1482 |
| South Crosby | 1524 |
| South Elmsley | 2659 |
| TOTAL | 164599 |

# LOCKS 43-45

North Burgess
North Crosby
Bastard
Bedford
Minchinbrooke
South Crosby
Rear of Leeds + Landsdowne
Front of Leeds + Landsdowne
Portlaw
Loughborough
Starrington
Pittsburgh
Kingston
Ernestown
Wolfe Island

Population: Lockstations 43-45
: Upper Brewers, Lower Brewers

1) County of Lennox and Addington

| | |
|---|---|
| Ernestown | 5600 |

2) County of Frontenac

| | |
|---|---|
| Kingston | 60408 |
| Bedford | 839 |
| Hinchinbrooke | 1125 |
| Howe Island | 286 |
| Kingston | 29561 |
| Loughborough | 3398 |
| Pittsburgh | 9567 |
| Portland | 4250 |
| Storrington | 3225 |
| Wolfe Island | 1067 |

3) County of Leeds and Grenville

| | |
|---|---|
| Gananoque | 4844 |
| Newboro | 276 |
| Westport | 676 |
| Bastard | 2316 |
| Front of Escott | 1132 |

| | |
|---|---|
| Front of Leeds and Lansdowne | 4289 |
| Front of Yonge | 2020 |
| North Crosby | 800 |
| Rear of Leeds and Lansdowne | 2468 |
| Rear of Escott and Yonge | 1482 |
| South Crosby | 1524 |
| TOTAL | 141153 |

LOCKS 46-49

NORTH Crosby
Newboro
Bedford
South Crosby
Hinchinbrooke
Sheffield
Rear of Yonge & Escott
Front of Yonge
Rear of Leeds & Lansdowne
Front of Escott
Front of Leeds & Lansdowne
Portland
LOUGHBOROUGH
Storrington
Camden East
Pittsburgh
Kingston
46-49
Howe Island
Napanee
Ernestown
Kingston
Wolfe Island
Amherst Island

Population: Lockstations 46-49
: Kingston Mills

1) County of Lennox and Addington

| | |
|---|---|
| Napanee | 4452 |
| Amherst Island | 388 |
| Camden East (.5) | 1900 |
| Ernestown | 11345 |
| North Fredricksburgh (.3) | 905 |
| South Fredricksburgh (.3) | 300 |

2) County of Frontenac

| | |
|---|---|
| Kingston | 60408 |
| Bedford | 839 |
| Hichinbrooke | 1125 |
| Howe Island | 286 |
| Kingston | 29561 |
| Loughborough | 3398 |
| Pittsburgh | 9567 |
| Portland | 4250 |
| Storrington | 3225 |
| Wolfe Island | 1067 |

3) United Counties of Leeds and Grenville

| | |
|---|---|
| Gananoque | 4844 |
| Newboro | 276 |
| Front of Leeds and Lansdowne | 4289 |
| Rear of Leeds and Lansdowne | 2468 |
| South Crosby | 1524 |
| North Crosby | 300 |
| TOTAL | 146715 |

LOCKS 1-7

Marmora
Belmont
Tweed
Hungerford
Huntingdon
Rawdon
Seymour
Asphodel
Tyendinaga
Thurlow
Percy
Sidney
Belleville
Murray
Brighton
Haldimand
Cramore
Trenton
Amelia sburgh
Sophiasburg
Hillier
Hallowell
Athol

Population: Lockstations 1-7
: Trenton, Sydney, Glen Miller, Batawa, Trent, Frankford, Glen Ross

1) County of Hastings

| | |
|---|---|
| Huntingdon | 1915 |
| Thurlow | 6595 |
| Rawdon | 2450 |
| Sidney | 15951 |
| Marmora | 1515 |
| Hungerford (.35) | 895 |
| Tyendinaga (all) | 2661 |
| Belleville | 36720 |
| Trenton | 15068 |
| Desoronto | 1849 |
| Frankford | 1922 |
| Stirling | 1795 |
| Marmora (all) | 1331 |
| Tweed | 1634 |

2) County of Northumberland

| | |
|---|---|
| Murray | 5879 |
| Brighton | 3492 |
| Cramahe | 2486 |
| Percy | 2663 |
| Seymour | 3550 |
| Alnwick (all) | 764 |
| Haldimand (all) | 3484 |
| Brighton | 3456 |
| Campbellford | 3402 |
| Colborne | 1879 |
| Hastings | 1003 |

3) County of Peterborough

| | |
|---|---|
| Belmont (.5) | 1141 |
| Asphodel (.5) | 872 |
| Norwood | 1266 |
| Havelock | 1355 |
| TOTAL | 128993 |

LOCKS 9-18

Methuen
Lake
Burleigh
Dummer
Belmont
Marmora
Harwood
Smith
Douro
Asphodel
Seymour
15-17
Rawdon
Huntingdon
Peterborough
Harth
Otonabee
Percy
Alnwick
Tyendinaga
Murray
Sidney
Belleville
Brighton
Hamilton
Cramahe
Trenton
Colborne
Port Hope
Cobourg

Population: Lockstations 9-18
: Meyers, Haigues Reach, Ranney Falls, Campbellford, Crowe Bay, Healey Falls, Hastings

1) County of Hastings

| | |
|---|---|
| Marmora | 1515 |
| Rawdon | 2450 |
| Sidney | 15951 |
| Madoc | 1616 |
| Huntingdon | 1915 |
| Thurlow | 2308 |
| | |
| Belleville | 36720 |
| Trenton | 15068 |
| Frankford | 1922 |
| Marmora and Lake | 1200 |
| Stirling | 1795 |

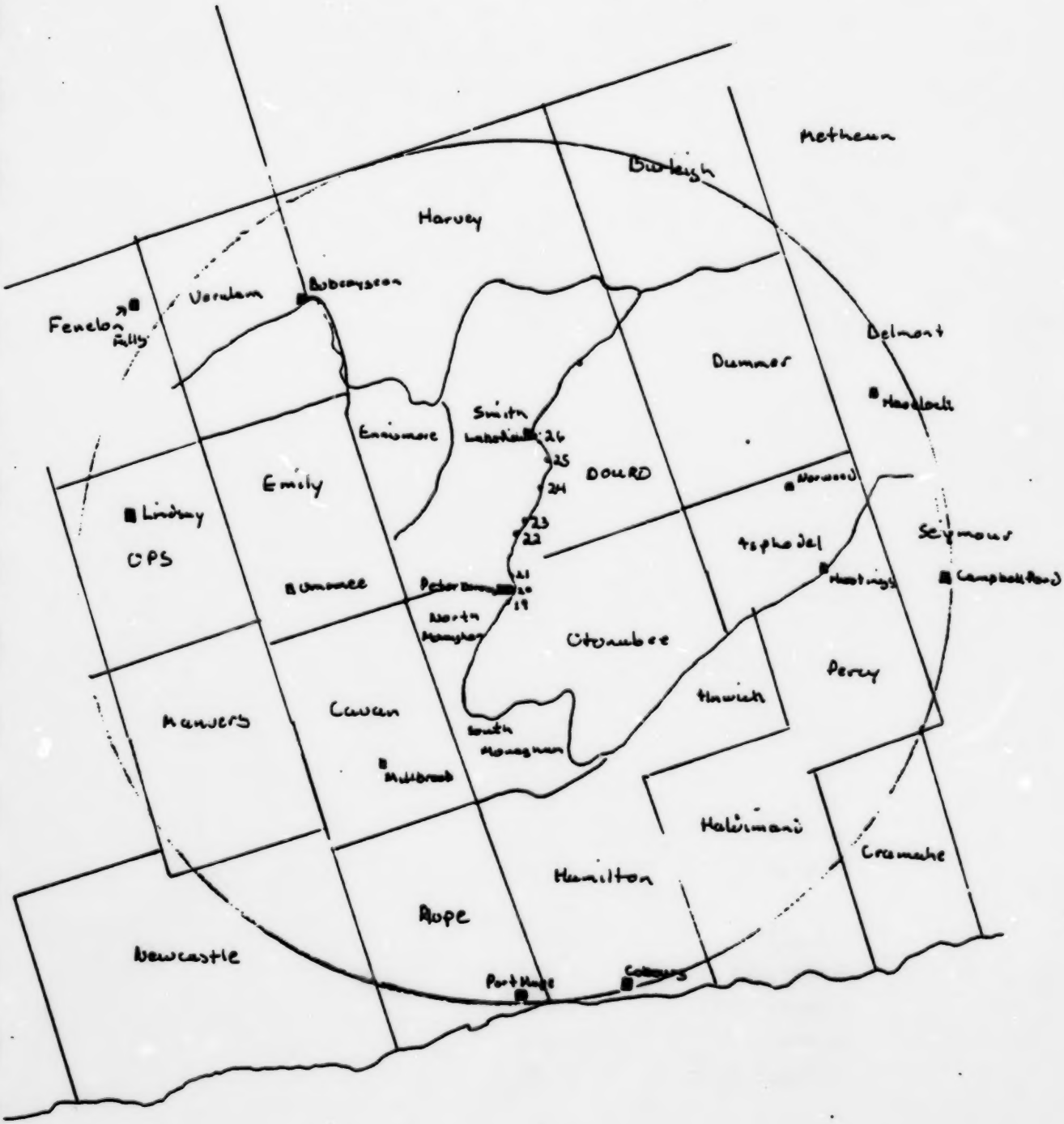
2) County of Northumberland

| | |
|---|---|
| All county population except Hope Township | 62973 |

3) County of Peterborough

| | |
|---|---|
| Belmont and Methuen | 2282 |
| Dummer | 2166 |
| Otonabee | 4659 |
| Douro | 3318 |
| North Monaghan | 1137 |
| South Monaghan | 1021 |
| Burleigh | 600 |
| Peterborough | 61330 |
| Havelock | 1335 |
| Norwood | 1266 |
| TOTAL | 222259 |

LOCKS 19-26


Methven
Bidwell
Harvey
Fenelon Falls
Verulam
Bobcaygeon
Dummer
Belmont
Haultain
Smith
Ennismore
26
25
24
DOURO
Emily
Lindsay
OPS
Norwood
23
22
Asphodel
Seymour
Campbellford
Hastings
Peterborough
21
20
19
North Monaghan
Otonabee
Percy
Manvers
Cavan
Millbrook
Hiawatha
South Monaghan
Halliburton
Cramahe
Hamilton
Alnwick
Newcastle
Port Hope
Cobourg

Population: Lockstations 19-26
: Scott's Mills, Ashburnham, Peterborough, Nassau Mills, Otonabee, Douro, Sawyer Creek, Lakefield

1) County of Northumberland

| | |
|---|---|
| Alnwick | 764 |
| Cramahe (40%) | 994 |
| Haldimand (all) | 3484 |
| Hamilton | 7389 |
| Hope | 3595 |
| Percy | 2663 |
| Seymour (.25) | 887 |
| | |
| Campbellford | 3402 |
| Cobourg | 13064 |
| Port Hope | 10462 |
| Hastings | 1003 |

2) County of Victoria

| | |
|---|---|
| Manvers | 4073 |
| Ops | 3384 |
| Emily | 4796 |
| Verulam | 3038 |
| Fenelon | 4810 |
| | |
| Lindsay | 14626 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Omemee | 871 |
| Sturgeon Point | 65 |

3) County of Peterborough

| | |
|---|---|
| Peterborough | 61330 |
| Havelock | 1335 |
| Lakefield | 2318 |
| Millbrook | 940 |
| Norwood | 1266 |
| | |
| Asphodel | 1744 |
| Belmont (.5) | 1141 |
| Burleigh (.8) | 960 |
| Cavan | 4043 |
| Douro | 3318 |
| Dummer | 2166 |
| Ennismere | 3374 |
| Harvey | 1882 |
| North Monaghan | 1137 |
| Otonabee | 4659 |
| Smith | 7799 |
| South Monaghan | 1021 |
| TOTAL | 185199 |

LOCKS 27-31

Anstruther
Chandos
Cavendish
Galway
Somerville
Burleigh
Methuen
Harvey
31
30
28
Fenelon
Verulam
27
Dummer
Belmont
Havelock
Smith
Emily
Lakefield
Douro
Lindsay
OPS
Dmmer
Peterborough
Ashphodel
Seymour
Hastings
North Monaghan
Otonabee
Asphodel
Cavan
South Monaghan
Harvey
Millbrook

Population: Lockstations 27-31
: Young's Point, Burleigh, Buckhorn

1) County of Victoria

| | |
|---|---|
| Lindsay | 14626 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Omemee | 871 |
| Sturgeon Point | 65 |
| Emily | 4796 |
| Fenelon (all) | 4810 |
| Manvers (.2) | 814 |
| Ops (.85) | 2876 |
| Somerville (all) | 1679 |
| Verulam | 3038 |

2) County of Peterborough

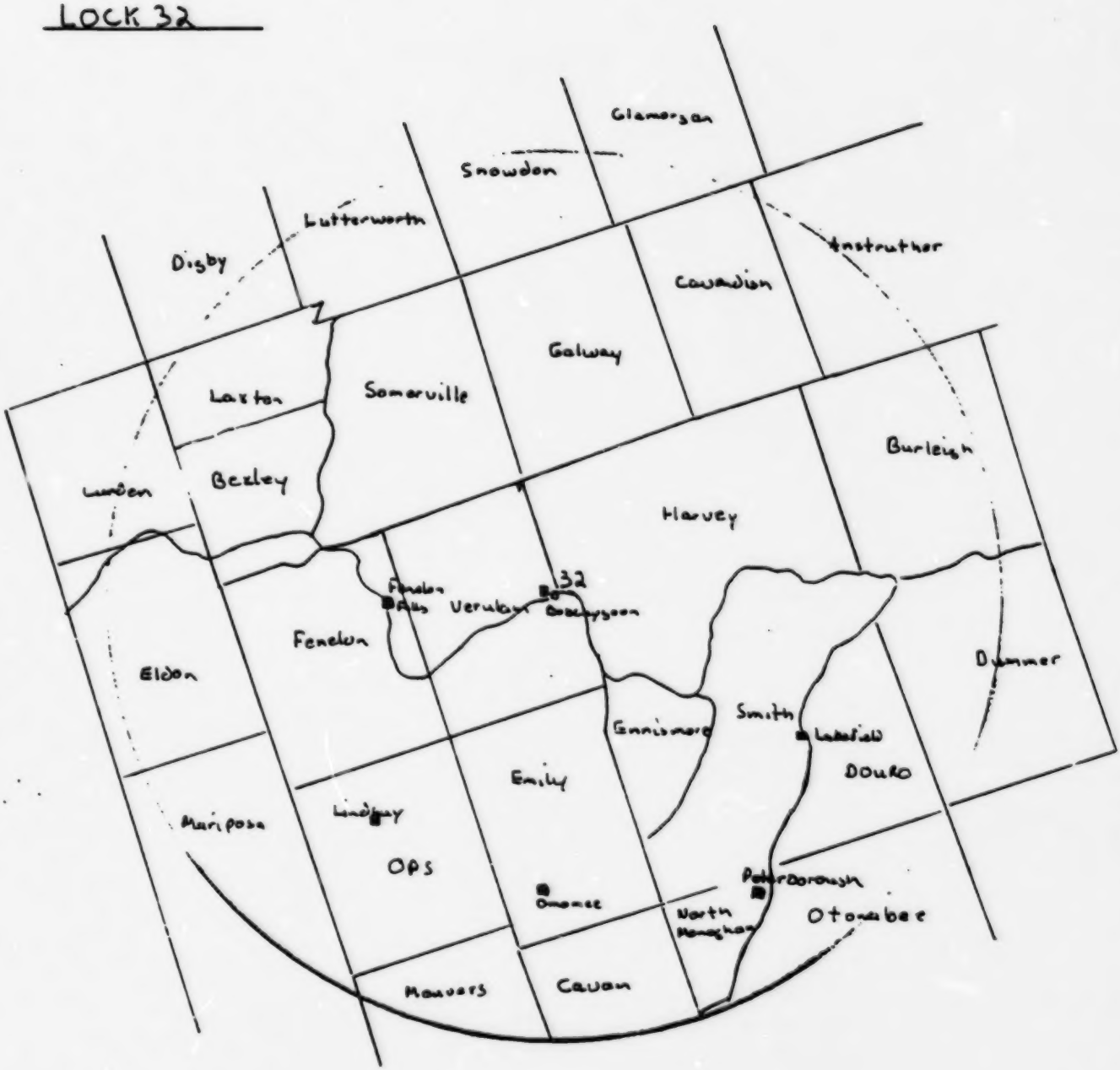
| | |
|---|---|
| Peterborough | 61330 |
| Havelock | 1335 |
| Lakefield | 2318 |
| Norwood | 1266 |
| Asphodel | 1744 |
| Belmont and Methean | 2282 |
| Burleigh and Anstruther | 1200 |

| | |
|---|---|
| Cavan (.85) | 3436 |
| Douro | 3318 |
| Dummer | 2166 |
| Ennismore | 3374 |
| Galway and Cavendish | 442 |
| Harvey | 1882 |
| North Monaghan | 1137 |
| Otonabee | 4659 |
| Smith | 7799 |
| South Monaghan (all) | 1021 |

3) County of Northumberland

| | |
|---|---|
| Hastings | 1003 |
| Alnwick (all) | 764 |
| Percy (all) | 2663 |
| Seymour (.2) | 710 |
| TOTAL | 139505 |

LOCK 32


Glamorgan
Snowden
Lutterworth
Digby
Dysbruther
Cavendish
Galway
Laxton
Somerville
Burleigh
Lumden
Bexley
Harvey
32
Fenelon Falls
Verulam
Bobcaygeon
Fenelon
Eldon
Dummer
Ennismore
Smith
Lakefield
Douro
Emily
Mariposa
Lindsay
Ops
Omemee
Peterborough
North Monaghan
Otonabee
Mowers
Cavan

Population: Lockstation 32
: Bobcaygeon

1) County of Peterborough

| | |
|---|---|
| Peterborough | 61330 |
| Lakefield | 2318 |
| Burleigh and Anstruther (.7) | 840 |
| Cavan (.45) | 1819 |
| Douro | 3318 |
| Dummer (.5) | 1083 |
| Ennismore | 3374 |
| Galway and Cavendish | 442 |
| Harvey | 1882 |
| North Monaghan | 1137 |
| Otonabee (.35) | 1630 |
| Smith | 7799 |

2) County of Victoria

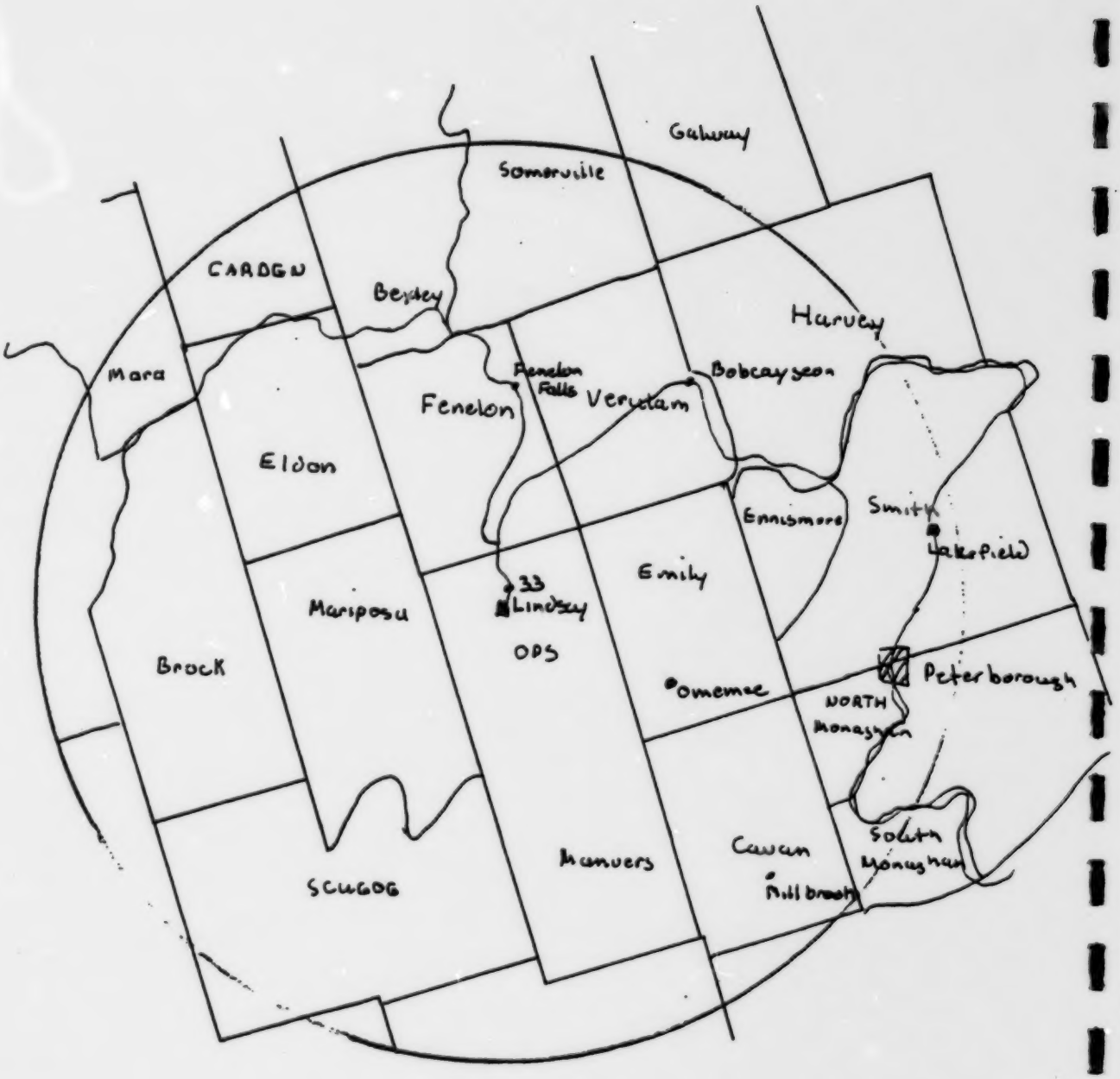
| | |
|---|---|
| Lindsay | 14626 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Omemee | 871 |
| Sturgeon Point | 65 |

| | |
|---|---|
| Bexley | 949 |
| Carden (.5) | 304 |
| Eldon (.8) | 1699 |
| Emily | 4796 |
| Fenelon | 4810 |
| Laxton, Digby and Lonford (all) | 820 |
| Manvers (.5) | 2036 |
| Mariposa (.65) | 3412 |
| Ops | 3384 |
| Somerville | 1679 |
| Verulam | 3038 |

3) County of Haliburton

| | |
|---|---|
| Glamorgan (.4) | 195 |
| Lutterworth (.6) | 429 |
| Snowdon (.75) | 487 |
| TOTAL | 134069 |

Lochstation 33



Population: Lockstation 33
: Lindsay

1) County of Peterborough

| | |
|---|---|
| Peterborough | 102740 |
| Lakefield | 2318 |
| Millbrook | 940 |
| Douro (all) | 3318 |
| Ennismore | 3374 |
| Harvey | 1882 |
| North Monaghan | 1137 |
| Cavan | 4043 |
| Smith | 7799 |
| South Monaghan | 1021 |

2) Regional Municipality of Durham

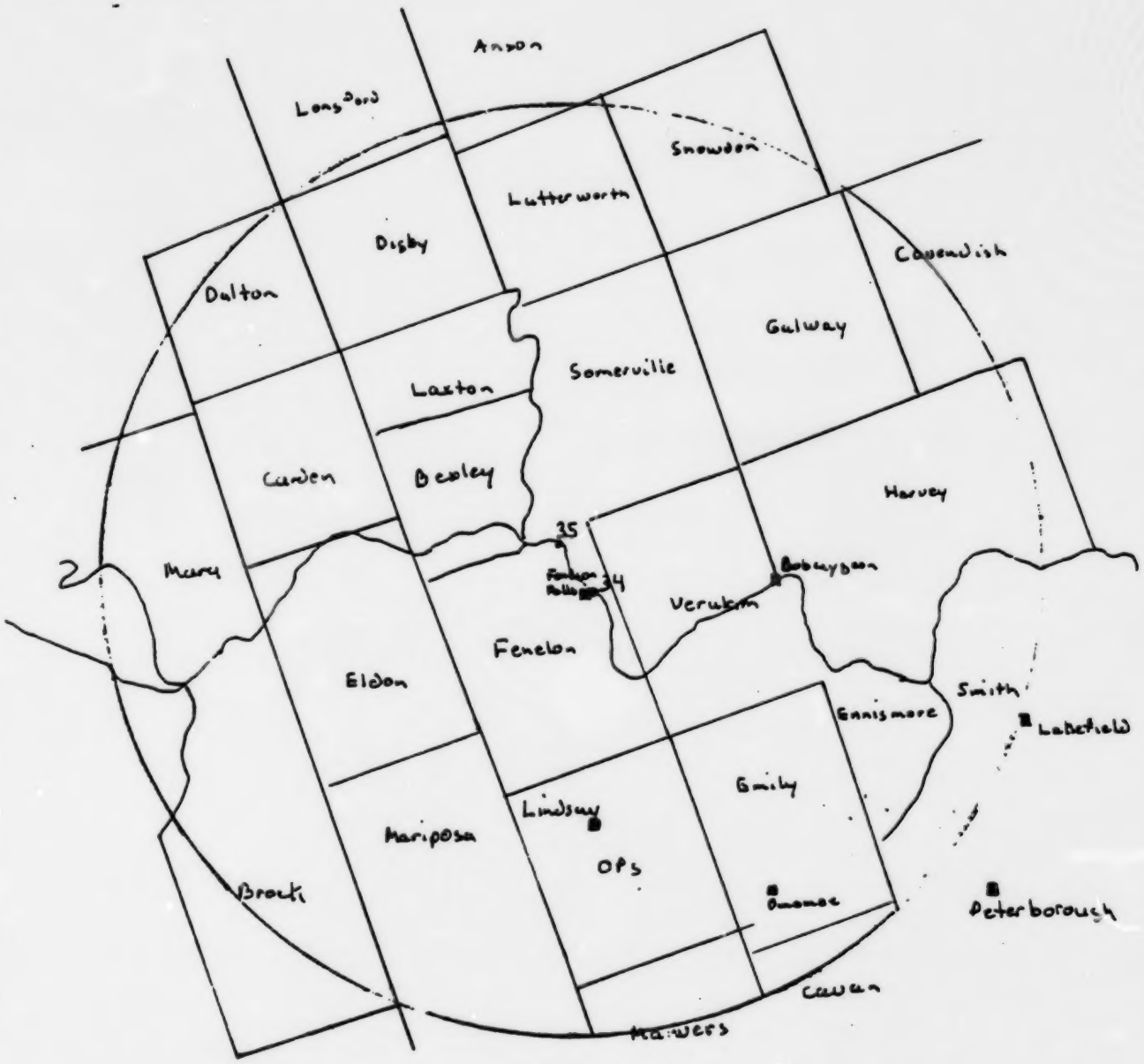
| | |
|---|---|
| Scugog | 14645 |
| Brock | 9806 |

3) County of Victoria

| | |
|---|---|
| Lindsay | 14626 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Onemee | 871 |
| Sturgeon Point | 65 |
| Bexley | 949 |
| Carden | 908 |
| Eldon | 2124 |
| Emily | 4796 |
| Fenelon | 4810 |

| | |
|---|---|
| Manvers | 4073 |
| Mariposa | 5250 |
| Ops | 3384 |
| Somerville (all) | 1679 |
| Verulum | 3038 |
| TOTAL | 202793 |

LOCKS 34-35


Anson
Longford
Snowdon
Lutterworth
Digby
Dalton
Cavendish
Galway
Somerville
Laxton
Camden
Bexley
Harvey
35
Murray
34
Verulam
Bobcaygeon
Fenelon
Eldon
Smith
Ennismore
Lakefield
Emily
Lindsay
Mariposa
OPs
Brock
Omemee
Peterborough
Cavan
Manvers

Population: Lockstation 34-35
: .Fenelon Falls, Rosedale

1) County of Haliburton

| | |
|---|---|
| Lutterworth | 715 |
| Snowdon (all) | 650 |

2) County of Victoria

| | |
|---|---|
| Lindsay | 14626 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Omemee | 871 |
| Sturgeon Point | 65 |
| Bexley | 949 |
| Carden | 608 |
| Dalton | 336 |
| Eldon | 2124 |
| Emily | 4796 |
| Fenelon | 4810 |
| Laxton, Digby and Longford | 820 |
| Manvers | 800 |
| Mariposa | 5250 |
| Ops | 3384 |
| Somerville | 1679 |
| Verulam | 3038 |

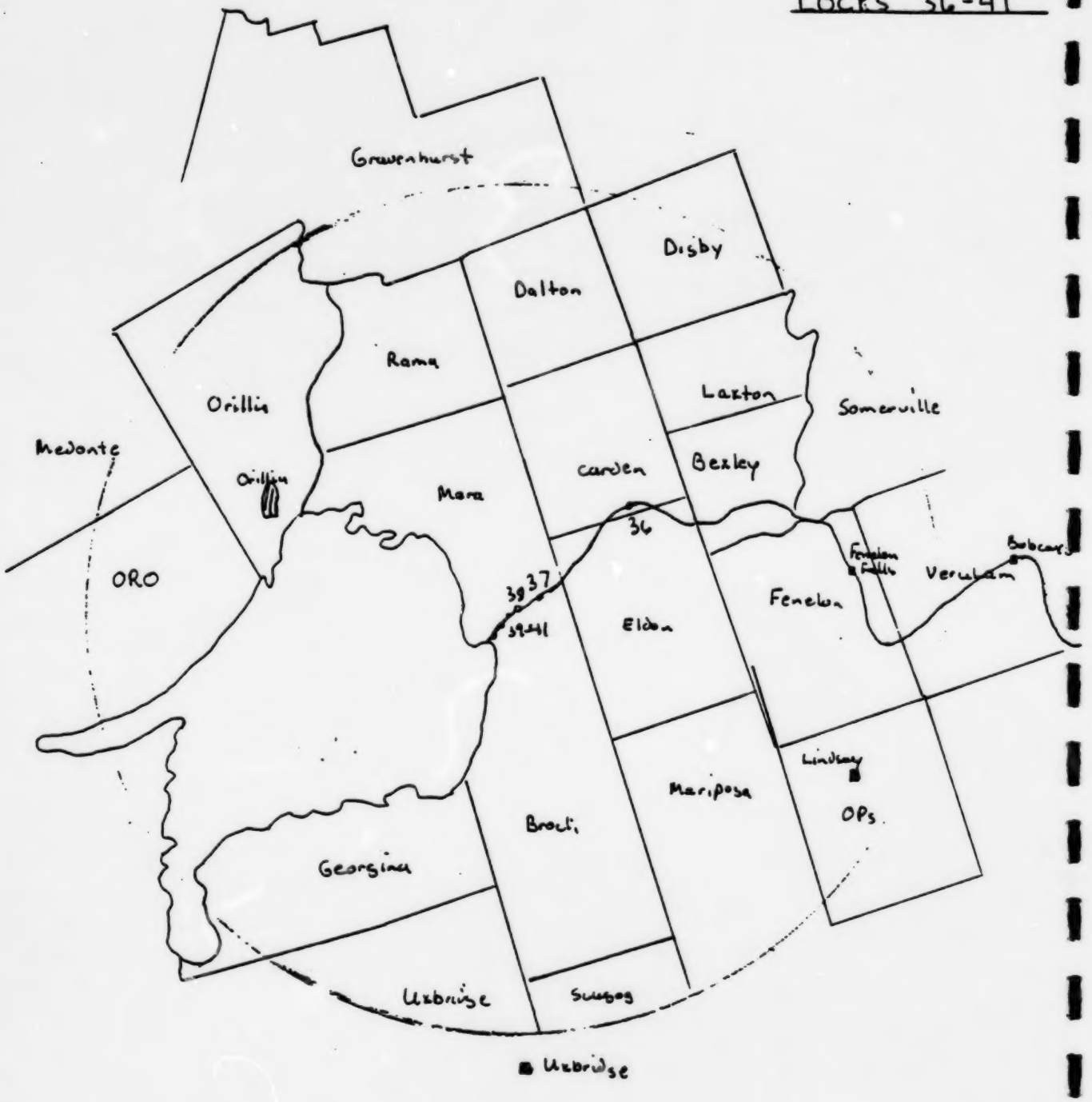
3) County of Simcoe

| | |
|---|---|
| Mara (.85) | 3292 |

4) Regional Municipality of Durham

| | |
|---|---|
| Brock (.5) | 4903 |
| TOTAL | 57213 |

LOCKS 36-41


Gravenhurst
Dalton
Digby
Rama
Laxton
Somerville
Orillia
Mnjikaning
Mara
Carden
Bexley
Mnjikaning
36
37
39
41
Fenelon Falls
Bobcaygeon
Verulam
ORO
Fenelon
Eldon
Lindsay
Mariposa
Brock
OPs
Georgina
Uxbridge
Scugog
Uxbridge

Population: Lockstations 36-41
: Kirkfield, Bolsover, Talbot, Portage, Thorah, Gamebridge

1) Regional Municipality of Durham

| | |
|---|---|
| Uxbridge (.5) | 5822 |
| Scugog (.25) | 3661 |
| Brock | 9806 |

2) Regional Municipality of York

| | |
|---|---|
| Georgina | 20898 |

3) County of Victoria

| | |
|---|---|
| Lindsay | 5894 |
| Bobcaygeon | 1758 |
| Fenelon Falls | 1739 |
| Sturgeon Point | 65 |
| Bexley | 949 |
| Carden | 608 |
| Dalton | 336 |
| Eldon | 2124 |
| Fenelon | 4810 |
| Laxton, Digby and Longford | 820 |
| Mariposa | 5250 |
| Ops | 3384 |
| Somerville | 1679 |
| Verulam | 3038 |

4) County of Simcoe

| | |
|---|---|
| Orillia | 23786 |
| Mara | 3874 |
| Rama | 1464 |
| Orillia (.8) | 5617 |
| Oro (.6) | 4395 |
| Medonte (.35) | 1513 |

5) District Municipality of Muskoka

| | |
|---|---|
| Gravenhurst | 1000 |
| TOTAL | 114290 |

LOCK 42

Georgian Bay
Muskoka
Bracebridge
Gravenhurst
Longford
Dysby
Matchedash
Port Mcnicoll
Midland
Victoria Harbour
42
Dalton
Tay
Oriddia
Rama
Laxton
Medonte
Oro
Lake
Simcoe

Population: Lockstation 42
: Couchiching

1) District Municipality of Muskoka

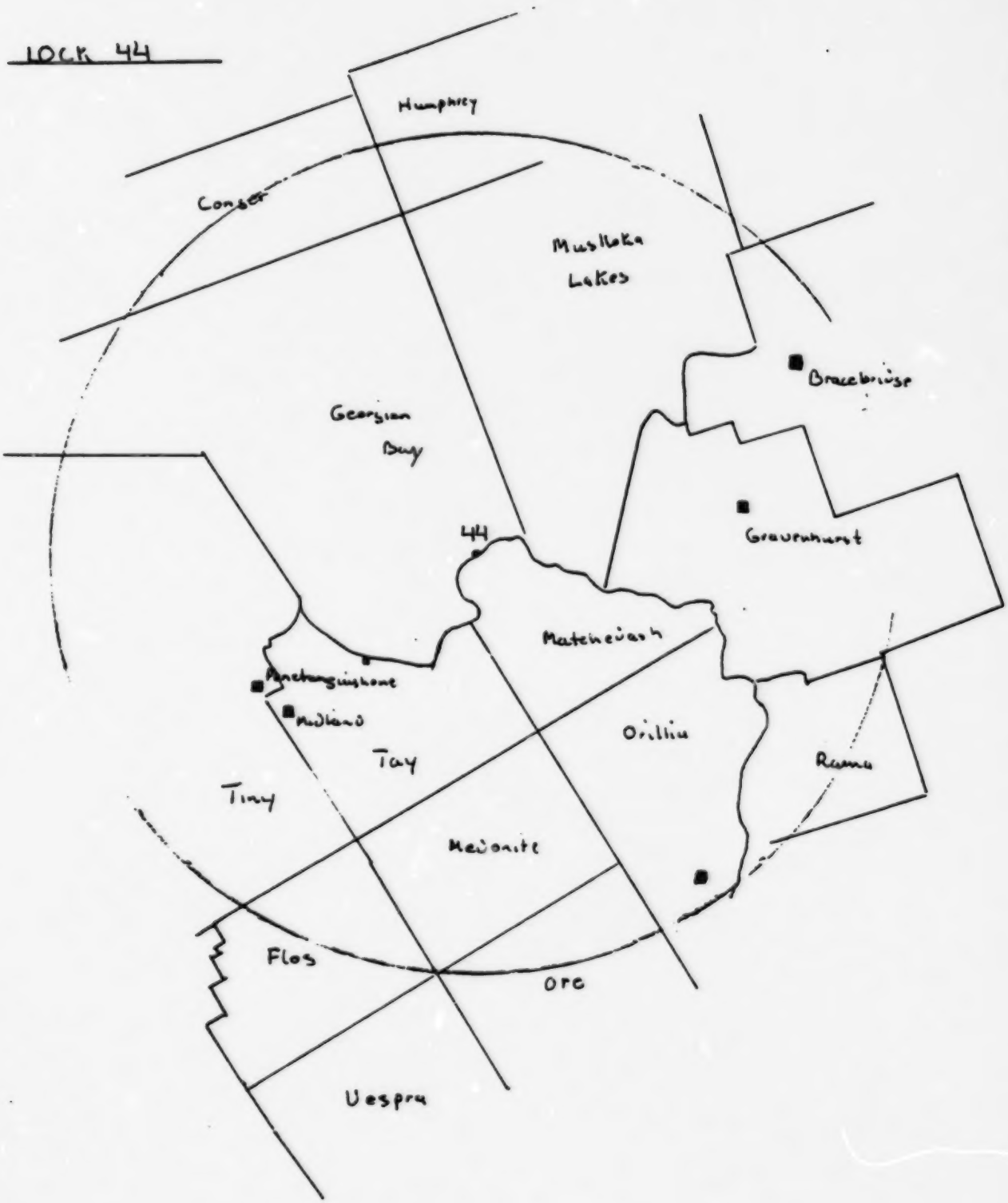
| | |
|---|---|
| Bracebridge | 9322 |
| Gravenhurst | 8421 |
| Georgian Bay (.65) | 1207 |
| Muskoka (.5) | 2381 |

2) County of Victoria

| | |
|---|---|
| Carden | 608 |
| Dalton | 336 |
| Eldon | 849 |
| Laxton, Digby and Longford | 820 |

3) County of Simcoe

| | |
|---|---|
| Orillia | 23786 |
| Midland | 12049 |
| Coldwater | 1046 |
| Port McNicoll | 1926 |
| Victoria Harbour | 1097 |
| Mara | 3874 |
| Matchedash | 498 |
| Medonte | 4323 |
| Orillia | 7022 |
| Oro | 7326 |
| Rama | 1464 |
| Tay (.8) | 4796 |
| TOTAL | 93151 |


LOCK 44
Humphrey
Conger
Muskoka Lakes
Bracebridge
Georgian Bay
44
Gravenhurst
Matchedash
Midland
Tay
Tiny
Orillia
Ramara
Medonte
Flos
Ore
Vespra

Population: Lockstation 44
: Big Chute

1) District Municipality of Muskoka

| | |
|---|---|
| Bracebridge | 8000 |
| Gravenhurst | 7800 |
| Georgian Bay | 1857 |
| Muskoka Lakes | 4762 |

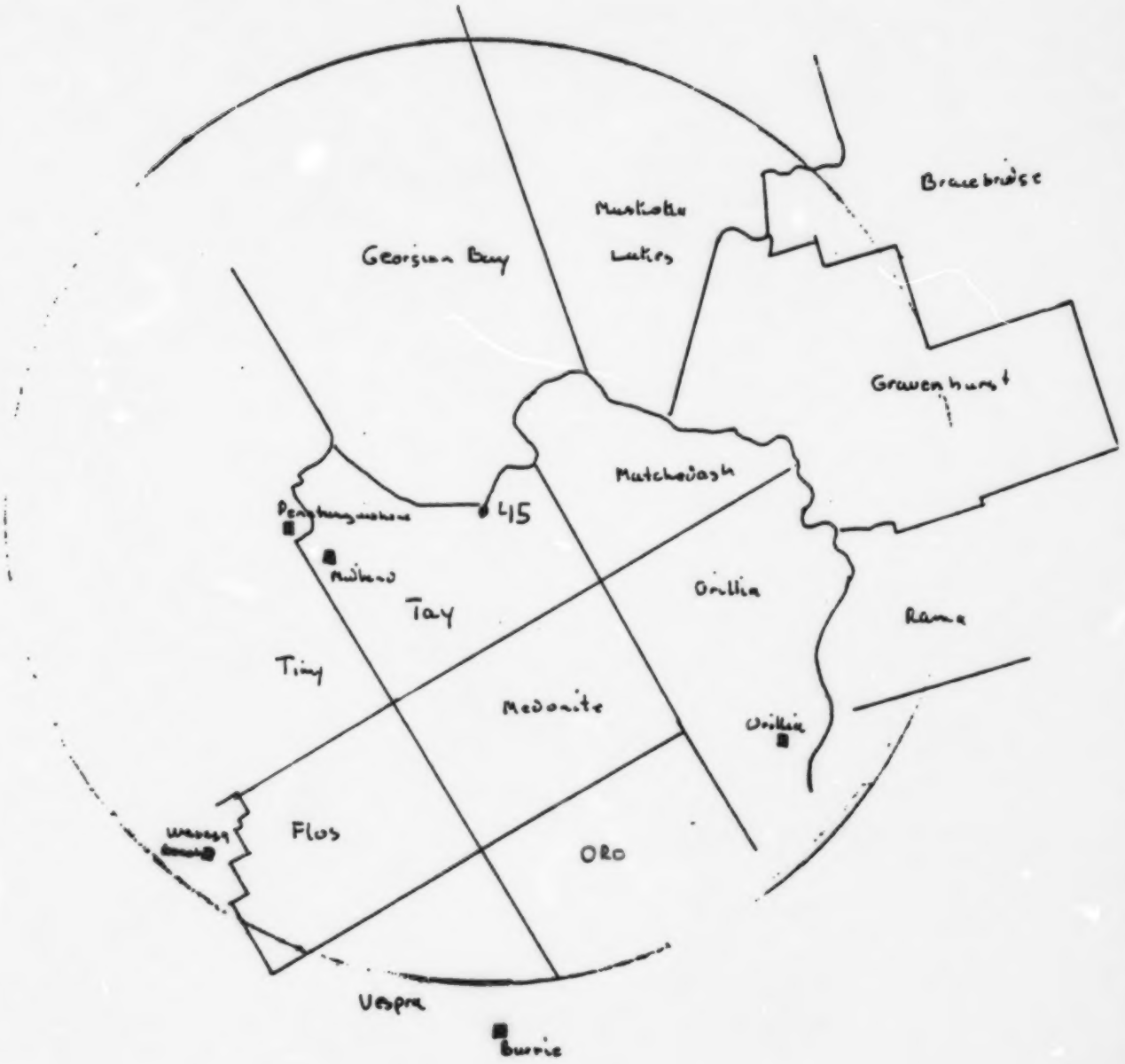
2) District of Parry Sound

| | |
|---|---|
| Humphrey | 300 |
| Conger | 300 |

3) County of Simcoe

| | |
|---|---|
| Orillia | 23786 |
| Midland | 12049 |
| Penetanguishene | 5449 |
| Coldwater | 1046 |
| Port McNicholl | 1926 |
| Victoria Harbour | 1097 |
| Flos | 751 |
| Matchedash | 498 |
| Medonte | 4323 |
| Orillia | 7022 |
| Oro | 600 |
| Rama | 500 |
| Tay | 5995 |
| Tiny | 7245 |
| TOTAL | 95306 |

LOCK 45


Georgian Bay
Muskoka Lakes
Bracebridge
Gravenhurst
Matchedash
45
Tay
Orillia
Rama
Tiny
Medonte
Flos
ORO
Barrie

Population: Lockstation 45
: Port Severn

1) County of Simcoe

| | |
|---|---|
| Orillia | 23786 |
| Midland | 12049 |
| Penetanguishene | 5449 |
| Wasaga Beach | 4588 |
| Coldwater | 1046 |
| Port McNicoll | 1926 |
| Victoria Harbour | 1097 |
| Flag | 2506 |
| Matchedash | 498 |
| Medonte | 4326 |
| Orillia | 7022 |
| Oro | 7326 |
| Rama | 500 |
| Tay | 5995 |
| Tiny | 7245 |
| Vespra | 3000 |

2) District of Muskoka

| | |
|---|---|
| Gravenhurst | 7600 |
| Muskoka Lakes | 3000 |
| Georgian Bay | 1857 |
| TOTAL | 100812 |

# Appendix C

## Evaluative Matrices for Final Lockstation Classification

Each matrix consists of the following:

a) The four category scores
B) A column which contains the total score
C) A column which contains the overall score
D) A column which contains the class designation of the lockstation.

The total score is divided by four as there are 4 catergorizing pieces of data. This produces an overall score which has a minimum of 1 and a maximum of 3. An overall score in the range of 1-1.66 gives a class designation of tertiary. A range of 1.67-2.33 defines the secondary lockstation class designation. A range of 2.34-3.00 defines the primary class designation.

## RIDEAU CANAL MATRIX

| Lockstation | L of S | ATT | POP | NHRP | TS | OR | CL DN |
|---|---|---|---|---|---|---|---|
| Ottawa | P | P | P | P | 12 | 3 | P |
| Hartwells | S | P | P | S | 10 | 2.5 | P |
| Hogs Back | S | P | P | S | 10 | 2.5 | P |
| Black Rapids | S | T | P | S | 8 | 2 | S |
| Long Island | P | T | P | P | 10 | 2.5 | P |
| Burritts Rapids | T | S | S | T | 6 | 1.5 | T |
| Upper Nicholsons | T | T | S | T | 5 | 1.25 | T |
| Lower Nicholsons | T | T | S | T | 5 | 1.25 | T |
| Clowes | T | S | S | T | 6 | 1.5 | T |
| Merrickville | P | T | T | P | 8 | 2 | S |
| Kilmarnock | T | S | T | T | 5 | 1.25 | T |
| Edmonds | T | S | T | T | 5 | 1.25 | T |
| Old Slys | S | T | T | S | 6 | 1.5 | T |
| Combined | S | T | T | P | 7 | 1.75 | S |
| Detached | T | T | T | T | 4 | 1 | T |
| Poonamalie | T | S | T | T | 5 | 1.25 | T |
| Beveridges | T | - | T | T | | | T |
| Narrows | S | S | T | S | 7 | 1.75 | S |
| Newboro | S | T | T | P | 7 | 1.75 | S |
| Chaffeys | P | T | P | S | 9 | 2.25 | S |
| Davis | T | S | P | T | 7 | 1.75 | S |
| Jones Falls | P | S | S | P | 10 | 2.5 | P |
| Upper Brewers | T | T | S | T | 5 | 1.25 | T |
| Lower Brewers | T | S | S | T | 6 | 1.5 | T |
| Kingston Mills | P | P | S | P | 11 | 2.75 | P |

L OF S = Level of Service
ATT = Attendance
POP = Population
NHRP = Natural and Historic Resource Potential

TS = Total Score Max. = 12
Min. = 3
OR = Overall Rating (TS 4 cat)
CL DN = Class Designation (Primary, Secondary or Tertiary)

## TRENT-SEVERN WATERWAY MATRIX

| Lockstation | L of S | ATT | POP | NHRP | TS | OR | CL DN |
|---|---|---|---|---|---|---|---|
| Trenton | T | T | S | P | 7 | 1.75 | S |
| Sydney | T | T | S | T | 5 | 1.25 | T |
| Glen Miller | T | T | S | T | 5 | 1.25 | T |
| Batawa | T | T | S | T | 5 | 1.25 | T |
| Trent | T | T | S | T | 5 | 1.25 | T |
| Frankford | T | T | S | S | 6 | 1.5 | T |
| Glen Ross | T | T | S | S | 6 | 1.5 | T |
| Percy Reach | T | T | P | S | 7 | 1.75 | S |
| Meyers | T | T | P | T | 6 | 1.5 | T |
| Haigues Reach | T | T | P | T | 6 | 1.5 | T |
| Ranney Falls | T | T | P | S | 7 | 1.75 | S |
| Campbellford | T | T | P | T | 6 | 1.5 | T |
| Crowe Bay | T | T | P | T | 6 | 1.5 | T |
| Healey Falls | T | T | P | S | 7 | 1.75 | S |
| Hastings | T | T | P | S | 7 | 1.75 | S |
| Scotts Mills | T | S | P | S | 8 | 2 | S |
| Ashburnham | T | S | P | S | 8 | 2 | S |
| Peterborough | P | P | P | P | 12 | 3 | P |
| Nassau Mills | S | S | P | S | 9 | 2.25 | S |
| Otonabee | T | T | P | T | 6 | 1.5 | T |
| Douro | T | T | P | T | 6 | 1.5 | T |
| Sawyer Creek | T | T | P | T | 6 | 1.5 | T |
| Lakefield | T | T | P | S | 7 | 1.75 | S |
| Young's Point | S | S | S | S | 8 | 2 | S |
| Burleigh | S | S | S | S | 8 | 2 | S |
| Buckhorn | T | S | S | S | 7 | 1.75 | S |
| Bobcaygeon | S | P | S | P | 10 | 2.5 | P |
| Lindsay | T | P | P | S | 9 | 2.5 | S |
| Fenelon Falls | P | P | T | P | 11 | 2.75 | P |
| Rosedale | T | T | T | S | 5 | 1.25 | T |

## TRENT-SEVERN WATERWAY MATRIX (Con'd)

| Lockstation | L of S | ATT | POP | NHRP | TS | OR | CL DN |
|---|---|---|---|---|---|---|---|
| Kirkfield | S | P | T | P | 9 | 2.25 | S |
| Bolsover | T | T | T | T | 4 | 1 | T |
| Talbot | T | S | T | T | 5 | 1.25 | T |
| Gamebridge | S | P | T | S | 8 | 2 | S |
| Couchiching | T | T | T | S | 5 | 1.25 | T |
| Big Chute | P | P | T | P | 10 | 2.5 | P |
| Port Severn | S | S | T | P | 8 | 2 | S |
| Murray Canal | T | T | S | S | 6 | 1.5 | T |

L OF S = Level of Service
ATT = Attendance
POP = Population
NHRP = Natural and Historic Resource Potential
TS = Total Score Max. = 12 Min. = 3
OR = Overall Rating (TS 4 cat)
CL DN = Class Designation (Primary, Secondary or Tertiary)

## Appendix D
## Lockstation Classification Resolution (Discrepancies)

The following is a list of the stations which recorded a different placement for class designation in the socio-economic classification exercise. Accompanying each lockstation is a paragraph of discussion which details the reasons for final lockstation classification. As discussed in section 5.0, final placement occurred as a result of consultation between the socio-economic and planning units.

### Trent-Severn Waterway

Station: Trenton
Planning Designation: Primary
Socio-Economic Designation: Secondary

The planning unit designated this station as primary due to its close proximity to Highway 401. The rating reflected the idea that the station would be acting as a conduit, attracting traffic off the 401 to the Trenton lockstation and the 5 or 6 stations that closely follow it. However, the low attendance figures at all of these lockstations do not support this gateway perception. A second factor involved in the decision process was the tertiary level of service. There are no other primary lockstations which have but a tertiary level of service on either system. On the basis of this evidence, it was decided that a secondary class designation would be appropriate.

Station: Frankford
Planning Designation: Secondary
Socio-Economic Designation: Tertiary

This station is given a tertiary level of attendance in the socio-economic exercise. However, the lockstation location is inside

the town of Frankford. The site is known to experience heavy traffic and it was felt that the attendance figure was inaccurate. The planning unit believes the true value for attendance is well inside the secondary range. As a result, the lockstation maintains the secondary class designation originally given in the planning classification.

Station: Glen Ross
Planning Designation: Secondary
Socio-Economic Designation: Tertiary

This lockstation is one which had been expected to benefit from Trenton stations gateway effect. However, very low attendance figures seem to indicate that this is not occurring. It was decided that a tertiary class designation is appropriate.

Station: Rosedale
Planning Designation: Secondary
Socio-Economic Designation: Tertiary

Rosedale is a station which was weighted very heavily on water traffic and related factors in the planning classification. Rosedale's land based attendance and level of service are quite low resulting in the decision to classify this lockstation according to the socio-economic designation of tertiary.

Station: Kirkfield
Planning Designation: Primary
Socio-Economic Designation: Secondary

Kirkfield is a station where there seems to be little correlation between day use market area and attendance. It was agreed that the primary attendance level and high potential of the site put it well into the primary class of lockstations.

Station: Couchiching
Planning Designation: Secondary
Socio-Economic Designation: Tertiary

Couchiching acts as a water conduit for the northern section of the Trent-Severn Waterway. Once this weighting factor is removed from the analysis the station, which has a low key land influence, is deserving of a tertiary class designation.

Station: Port Severn
Planning Designation: Primary
Socio-Economic Designation: Secondary

This station suffers from the same day use market area correlation problem as Kirkfield. Additionally the attendance figure is suspected to be somewhat low by approximately 5000. It is believed that the planning designation is accurate.

## Rideau Canal

Station: Hartwells
Planning Designation: Secondary
Socio-Economic Designation: Primary

It was concluded that the very high figures for attendance and day use market areas distort this lockstation's designation. Much of the recorded attendance to the station occurs from people who use the locks as a shortcut to other destinations. The lockstation is situated inside the city of Ottawa and this results in a primary rating for day use market area. But when you collate day use as a function of level of service or natural and historic resource potential, both of which are secondary in classification, the market area shrinks correspondingly. It was concluded that a secondary class designation is correct for this station.

Station: Hog's Back
Planning Designation: Secondary
Socio-Economic Designation: Primary

The situation is very similar to that at Hartwell station previously discussed in this analysis. The conclusion is Hog's Back is to be designated a secondary station.

Station: Merrickville
Planning Designation: Primary
Socio-Economic Designation: Secondary

Two questionable factors at Merrickville are its tertiary scores for attendance and day use market area. After discussion it was concluded that the tertiary attendance estimate was inaccurate. Because of its high level of service and primary potential rating the station experiences heavy traffic. Thus the correct attendance value is estimated to be very high secondary to low primary. Similarly, equating day use as a function of level of service (primary) or natural and historic resource potential (primary) results in an expansion of the market area to reflect these attributes drawing power. On the basis of this information, the class designation for Merrickville was agreed to be primary.

Station: Old Slys
Planning Designation: Secondary
Socio-Economic Designation: Tertiary

After discussion, it was decided that the level of service offered at Old Slys is tertiary; not the secondary level which requires some special feature or facility. Placing this new value into the evaluative matrix results in a tertiary class designation for Old Slys.

Station: Newboro
Planning Designation: Primary
Socio-Economic Designation: Secondary

Newboro possesses outstanding resource potential and a high level of service. A tertiary level of visitor usage seemed unlikely because of the station's many attractive features. Feedback from planning and field staff revealed that the station is subject to very heavy visitation during peak periods. Additionally these qualities would serve to expand the lockstation's market area. Because of this information it was concluded that a primary class designation would be appropriate for Newboro station.

Station: Davis
Planning Designation: Tertiary
Socio-Economic Designation: Secondary

Davis is a low profile lockstation whose basic function is boat lockage. This is reflected by the lack of service development and minimal natural and historic potential. However the station is located such that at the fringes of the 40 km radius employed for market area determination are several population centers. These give the day use market area value an inflated score of primary. Discounting this effect to reflect station conditions transposes the stations classification from secondary to tertiary.